



This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

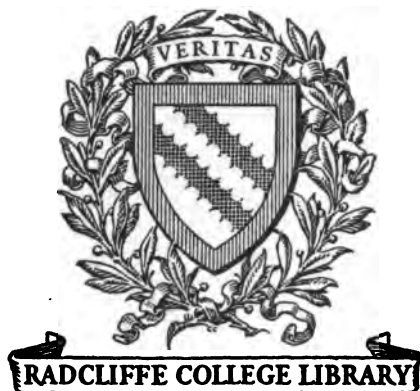
We also ask that you:

- + *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.
- + *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.
- + *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.
- + *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at <http://books.google.com/>

~~See 7489.17.25~~



WOMEN'S ARCHIVES
Transferred from
HARVARD COLLEGE LIBRARY
1960



Harvard College Library

RECEIVED BY BEQUEST

SEPTEMBER 20, 1926

Martia inermis ✓



AMERICAN RED CROSS
TEXT-BOOK
ON
HOME DIETETICS

FISH



**AMERICAN RED CROSS
TEXT-BOOK
ON
HOME DIETETICS**

BY

ADA Z. FISH

**HEAD OF ART AND HOME ECONOMICS DEPARTMENT
WILLIAM PENN HIGH SCHOOL
PHILADELPHIA**

WITH 7 ILLUSTRATIONS

**PHILADELPHIA
P. BLAKISTON'S SON & CO.
1012 WALNUT STREET**

Dec 7489-17, 1925
v

HARVARD COLLEGE LIBRARY
BEQUEST OF
MRS. CHESTER N. GREENOUGH
SEPTEMBER 20, 1926

COPYRIGHT, 1917, BY AMERICAN RED CROSS

641.07
#53

THE MAPLE PRESS YORK PA

INTRODUCTION

This book is designed for general use in classes to be taught under the supervision of the American Red Cross Nursing Service. The aim of the course is to give in a simple way the underlying principles of cookery. These are presented in fifteen lessons. There are also directions for fourteen lessons in practical cookery. For convenience a lesson in theory will usually be followed by one in practical cookery. For this reason one of each series of lessons is placed in each chapter of the book, in spite of the fact that this disturbs somewhat the logical arrangement of the subject-matter.

The individual recipes are given for convenience in laboratory work. They may also be used if the teaching is done by the demonstration method unless it is desirable to prepare sufficient food to serve the class and then the home recipe may be used. Where meals are to be prepared, the home recipes are to be used and it will be convenient to have the pupils work in groups. Lack of time will often prevent the preparation of all the foods suggested in the practical lessons.

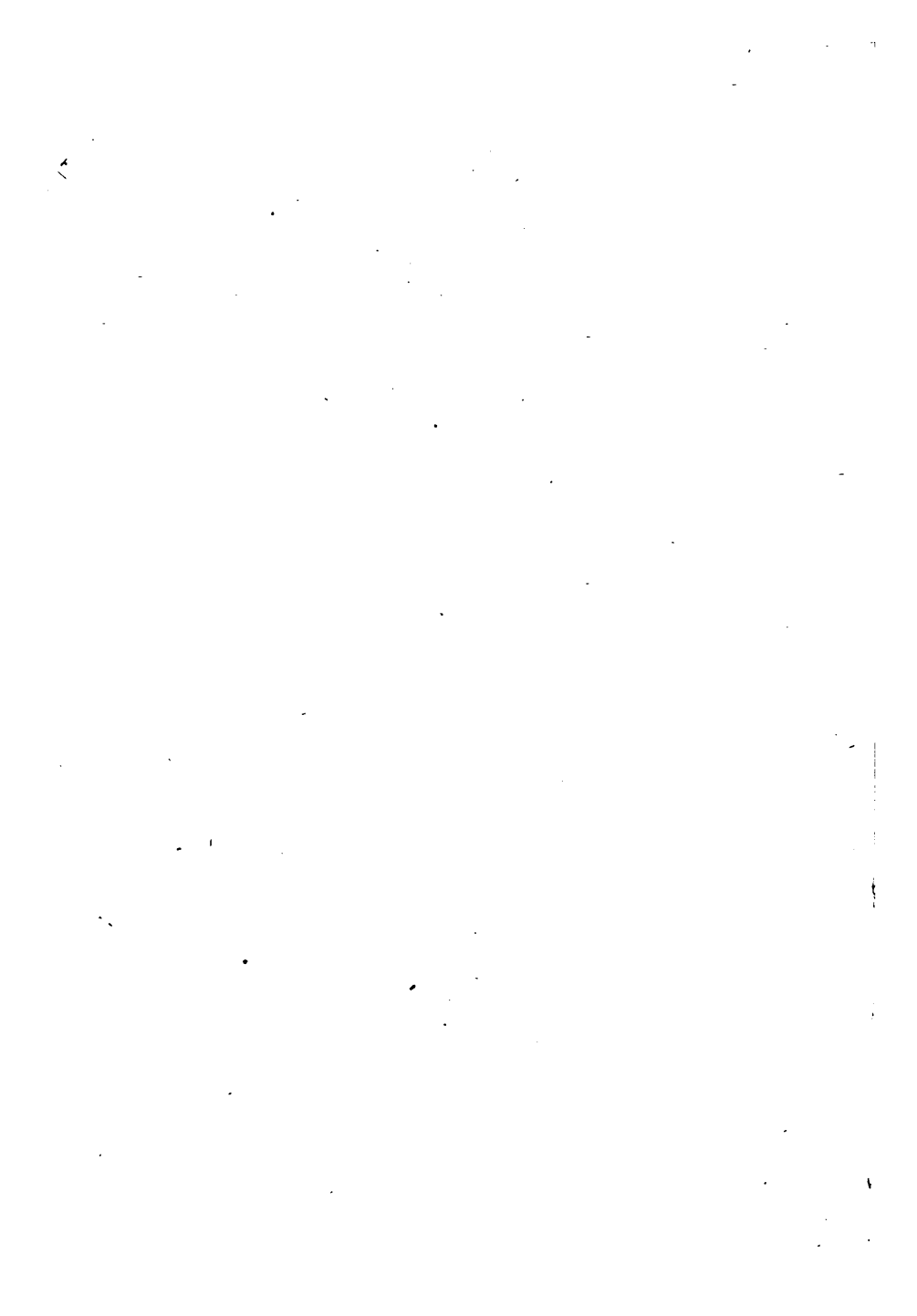
The equipment needed will depend upon whether the demonstration method of instruction or individual laboratory practice is adopted. In general, only cooking utensils are needed.

The references given at the close of each lesson are confined to U. S. Government publications which can be obtained either free or at a nominal price. In cases where no price is given single copies may be obtained (as long as the supply lasts) by application to the Department from which they are published. If several copies of the same publication are desired for class use, the request should be made through a Member of Congress. When a price is mentioned, the publication may be purchased for that sum from the Superintendent of Documents, Government Printing Office, Washington, D. C.; remittances should be by coupons, postal money order, express order, or New York draft.

To individual authors I may owe debts of which I am not aware, for my knowledge is an accumulation of material from various sources. The thoughts gleaned here and there have been interwoven with my experience until a separation of that which belongs to others and that which is really my own seems impossible. I recognize clearly, though, that much of the best of my

material is the result of investigations made by the United States Government, particularly the Department of Agriculture.

I wish to recognize here assistance which has been given me in preparing the work, by Anna G. Wetzel, teacher of dietetics, William Penn High School. Zeta B. Cundey, teacher of English, William Penn High School, has given me helpful criticism during the preparation of the manuscript. Dr. W. C. Rucker, Assistant Surgeon General, U.S. Public Health Service, Washington, D. C., was kind enough to read and make useful suggestions for the last three lessons. To Dr. C. F. Langworthy, Miss E. L. Hunt, and Miss H. W. Atwater, of the Office of Home Economics of the U. S. Department of Agriculture, I gratefully acknowledge my obligations for many suggestions and for very valuable constructive criticism.



CONTENTS

LESSON	PAGE
I. Hygiene of Food.	1-4
II. Nutrients.	5-11
III. Meat and Fish.	12-23
IV. Milk and Eggs.	24-30
V. Cereals—General Discussion.	31-39
VI. Cereals—Bread Making.	40-48
VII. Meat Substitutes—Cheese, Legumes, Nuts.	49-55
VIII. Vegetables and Fruits.	56-63
IX. Digestion.	64-71
X. Fuel Value and Dietary Standards.	72-79
XI. Bill-of-fare Making.	80-85
XII. Serving Family Meals.	86-91
XIII. Food for Infants and Young Children.	92-99
XIV. Food for School.	100-106
XV. Food for the Sick.	107-113



HOME DIETETICS.

LESSON I—SECTION A

HYGIENE OF FOOD

“Cleanliness is a most important consideration in cooking, for food materials may be the means of transmitting disease. True cleanliness must take into account freedom not only from what we know as “dirt” but also the micro-organisms which commonly accompany filth and dirt.”

In the world about us are hundreds of forms of bacteria which are invisible to the naked eye. They thrive best where uncleanly conditions exist. Decaying animal and vegetable matter is especially conducive to their growth. Some of these forms are of great value to man but others are a menace to a healthy body.

Flies, mosquitoes, and other insects are germ carriers and they should be carefully excluded from homes. Rats and even dogs and cats may spread disease. Danger also exists where dust collects for it may be laden with harmful forms of bacteria. Clean houses, clean clothing, clean

bodies, and clean food are then of the utmost importance.

The person who prepares food should wear clean clothing, simple in style, which can be easily laundered. Woolen dresses or "cast off" finery are entirely out of place in the kitchen. The body should be kept clean by frequent baths, the hair should be neatly combed, and the nose and mouth should be kept in good condition. Special attention should be given to the hands. They should always be washed before handling food and especially after having been to the toilet. It is quite possible that harmful colon bacteria may be on the hands from just opening and shutting the door of the toilet. The finger nails should be free from dirt. Never dip anything but a clean spoon into food when tasting it.

The dishes in which food is placed or served should be clean. After use they should be carefully scraped and piled in an orderly manner. Two pans of water are necessary for washing dishes; one with hot, soapy water, to remove the grease, and the other with boiling water for rinsing. Remember that high heat kills germs. It is far better to dry dishes by allowing the water to drain off from them than to wipe them on dirty towels. If they must be drained in a dusty place, they should be covered. Dish towels and dish

cloths should be kept clean. Wash and rinse them each time after using. Frequent scalding is also necessary. It is better to wash the glass first, then the silver, and finally the china.

Food should not be exposed to dust either in the home or in the market. Housekeepers should refuse to buy unwrapped bread, or other food that has been unnecessarily exposed. Wash fruit thoroughly before it is used. Loathsome diseases have been contracted from eating fruit handled carelessly or by diseased persons. Flour, sugar, and other foods that come in bags should be emptied into receptacles with tight covers. Remove fresh meat from the wrapping paper, wipe with a clean, damp cloth, and set near the ice or in the safe in the cellar. Milk should be kept in a closed vessel and in a cool place. The outside of the milk bottle should be washed before the bottle is opened. Butter, if purchased in wooden trays, should be removed immediately to a covered vessel. Frequently scald and air receptacles in which food is kept. Sunshine kills germs.

A refrigerator or a screened safe in a cellar for storing food should receive careful attention. Bits of food spilled on the shelves invite bacterial growth. Clean often with scalding water and washing soda or some other good cleaning material.

Keep a strainer in the sink to prevent particles of food from obstructing the drainage. This should be emptied into the garbage can after the dishes are scraped. Wash and rinse the strainer and hang it above the sink. After the dish washing is finished, wash every part of the sink with soap and hot water and use a strong solution of washing soda at least once a week.

Thoroughly clean and scald the garbage pail after it is emptied. Unless a local law prevents, line the garbage can with old newspapers before it is used again. Always keep the can tightly covered when in use.

REFERENCES

Care of Food in the Home. By Mrs. Mary Hinman Abel. Pp. 46, Figs. 2, 1909. (U. S. Department of Agriculture, Farmers' Bulletin 375.)

The Farm Kitchen as a Workshop. By Anna Barrows. Pp. 20, Figs. 6, 1914. (U. S. Department of Agriculture, Farmers' Bulletin 607.)

Selection of Household Equipment. By Helen W. Atwater. Pp. 24, pls. 4, Fig. 1, 1915. (U. S. Department of Agriculture, Yearbook Separate 646.) Price, 5 cents.

The Transmission of Disease by Flies. By Ernest A. Sweet. Pp. 20, pls. 2, Figs. 3, 1916. (U. S. Public Health Service, Public Health Reports, Supplement 29.)

LESSON II.—SECTION A

NUTRIENTS

The problem of nutrition is one of growing importance, not only because of the increased cost of food but because more and more we are coming to realize that a healthy body is man's greatest asset.

Food is technically defined as anything which, when taken into the body, is capable of building or repairing tissue or furnishing energy. The energy is used for performing internal muscular work, as the beating of the heart, and external muscular work, as chopping wood, walking, or playing ball.

Our bodies are wonderful pieces of machinery, far more wonderful than anything man has made. A variety of foods is needed to keep their intricate parts in normal condition. Nature, through our instincts, has guided us to some extent in the choice of foods. Her dictates were the starting point of our understanding of the facts about food and nutrition. They laid the foundation of a science which is rapidly developing as the result of careful and painstaking laboratory studies.

The scientist has classified the substances which make up our foods, or the nutrients, under five heads: water, mineral matters (ash), protein, carbohydrates, and fats.

Water ranks as food because it enters into the composition of every tissue, even bones and teeth. It regulates the body temperature and has a part to play in all nervous and muscular work. It has been estimated that two-thirds of the material in the human body is water, and since water is continually passing off from the body there must be a constant supply of it. Our foods as they are prepared for the table are about one-half water. They supply part but not all of the water needed, and must therefore be supplemented by drinking water. Since water is known to be capable of carrying diseases the greatest care should be taken to keep the supply pure.

Mineral substances play an important part in building the body and in its chemical reactions. There are many kinds used by the system. Among the most important are calcium (lime) salts, which are needed for bone formation. They are found abundantly in milk, eggs, cereals, and vegetables. Children need a considerable amount of calcium salts and for this reason special attention should be given to them in the diet. Lack of calcium may show itself in the form of an ab-

normal appetite for such substances as plaster, wood, or chalk, or in poor teeth.

Iron is very important, for its presence in the hemoglobin of the blood makes oxygen-carrying possible. Iron salts are found in nearly all foods, but especially in beef, eggs, oatmeal and some of the green vegetables.

Common salt (sodium chlorid) occurs in every tissue of the body except the enamel of the teeth, so it is important in our food. There are many other necessary mineral constituents, such as compounds of magnesia, sulphur, phosphorus, etc., and fortunately these are found in many of our staple foods.

Protein supplies nitrogen for tissue building. All people, old and young, need it to repair tissue waste. The growing child, however, needs it not only to repair waste but also for growth. There are several forms of protein, varying in composition. It is probable that the different proteins supply nitrogen in forms suited to different bodily needs, but this subject is still a matter for discussion and investigation. Safety would therefore seem to lie in the habitual use of a number of different kinds of protein, which explains perhaps the general tendency of man toward a mixed diet. We may obtain it from the animal and also from the vegetable kingdom, from milk, eggs, fish and

meat, and also from cereals, legumes and nuts. Protein not only supplies nitrogen for tissue building but may also be used as a source of energy. It is drawn upon for this purpose more largely if fats, starches, and sugars are limited in the diet.

The carbohydrates (starch, sugar, cellulose, etc.) can not supply nitrogen and so can not replace the nitrogen of protein as a building material, but they can spare it as a source of energy. Carbohydrates are obtained mainly from the vegetable kingdom.

Starch is manufactured by growing plants and stored up in the form of tiny grains lying within the plant cells. We obtain the greater part of the starch of our diet from cereals and potatoes.

Sugars, except lactose or milk sugar, are obtained from the vegetable kingdom. By far the most abundant kind in our diet is sucrose, which is obtained chiefly from the sugar cane, the sorghum, and the beet.

Fats, like carbohydrates, are incapable of replacing protein as a source of nitrogen for body building and repair. They serve as a source of heat and energy and have an energy value, per pound, $2\frac{1}{2}$ times that of protein or carbohydrates. We obtain them chiefly from meat, milk, eggs, and butter in the animal kingdom and from nuts, chocolate, and olives in the vegetable kingdom.

The body uses food as fuel, just as the engine uses coal. The unit for measuring energy is the calorie and the fuel value of our various food materials is therefore expressed in this term. It should be remembered, however, that the fuel value of a food is not its only value, for the body requires protein to supply nitrogen to build and repair tissue. It is important, therefore, to know of a given food not only its total fuel value but also what part of the fuel is in the form of protein.

LESSON II—SECTION B

STANDARD MEASUREMENTS AND APPLICATION

In this and all the lessons which follow the recipes are based upon level measurements. The standard cup, which holds one-half pint, is used. Flour should always be sifted before it is measured.

The following abbreviations are used: c. for cup, tb. for tablespoon, t. for teaspoon, qt. for quart, pt. for pint, lb. for pound, and f.g. for few grains.

EMERGENCY BISCUIT

(HOME RECIPE)

1 c. flour	1½ tb. butter or other fat
2 t. baking powder	⅓ c. milk
½ t. salt	

(INDIVIDUAL RECIPE)

½ c. flour	¾ tb. butter or other fat
1 t. baking powder	2⅓ tb. milk
¼ t. salt	

Method.—Butter muffin tins. Mix and sift the dry ingredients. Cut in the fat with two knives. Add the milk somewhat gradually and mix with as little stirring as possible. Fill

STANDARD MEASUREMENTS AND APPLICATION 11

the pans two-thirds full and bake in a hot oven twelve or fifteen minutes.

REFERENCES

Principles of Nutrition and Nutritive Value of Food. By W. O. Atwater. Pp. 48, Figs. 2. 1902. (U. S. Department of Agriculture, Farmers' Bulletin 142.)

Measurements for the Household. Pp. 149, Figs. 62. 1915. (U. S. Department of Commerce, Bureau of Standards Circular 55.) Price, 15 cents.

$$31 - 1 \text{ t. l.} = \frac{1}{3} \text{ oz.}$$

$$2 \text{ t. l.} = \frac{1}{3} \text{ oz.}$$

LESSON III—SECTION A

MEAT AND FISH

Meat, and the term is used here to include poultry as well as beef, mutton, and so on, is an important and a very generally used source of protein. An ordinary serving of meat once a day (or a like amount divided between two or all three meals) is a reasonable quantity, but it does not follow that more is harmful. Too much meat in the diet, however, is not economical, since it is seldom a cheap source of energy, and many believe that a large amount of meat protein imposes a needless tax on the digestive and excretory organs and may be an important contributing cause to intestinal putrefaction. A part of the supply of protein should be obtained from milk, eggs, legumes, etc.

The lean portion of meat is composed of bundles of fibers held together by connective tissue. Albumin and gelatin are the principal proteins found in meat and they should always be considered when it is being prepared for food. Albumin is hardened by intense heat and gelatin is obtained from the connective tissue by long, slow application of heat, with moisture.

"Results of experiments show that there is no marked difference in ease of digestion of various kinds and cuts of meat. Over 95 per cent. of the proteins and fat is digested; which means that the nutrients of meat are largely used by the body with little waste. Therefore, those who wish to use the cheaper cuts of meat need not fear that in so doing their families will be less well nourished than by the use of more expensive cuts." C. F. Langworthy.

As it occurs in our food the protein from meat is more readily digested and absorbed than the vegetable protein and there is reason to believe that it is more valuable to the body, since it is more like body protein in structure and so more readily used.

When a muscle is exercised vigorously the connective tissue increases in amount and becomes hardened and the muscle is consequently hardened or toughened and the amount of extractives (substances which give flavor) increased. Tough meats, as a rule, therefore, contain more flavor than the other meats. There are many good ways of making palatable dishes from them. The cuts of tough meat are usually less expensive and their use is economical, especially when the flavors are to be drawn out, as in soups and stews. The shank and chuck are examples of tough cuts.

The muscles that are exercised slightly have softer and often more fat connective tissue and so are more tender. These meats make the tender

cuts, such as the tenderloin and sirloin of beef. They are the most expensive parts of meat and are commonly used for roasting and broiling, rather than for the long, slow cooking desirable for tougher cuts.

Some muscles have a moderate amount of exercise and lie near the muscles which are exercised more vigorously. They have tender fibers and a fair proportion of juice, and may well be used for boiling and roasting. The top of the round and the rump are illustrations.

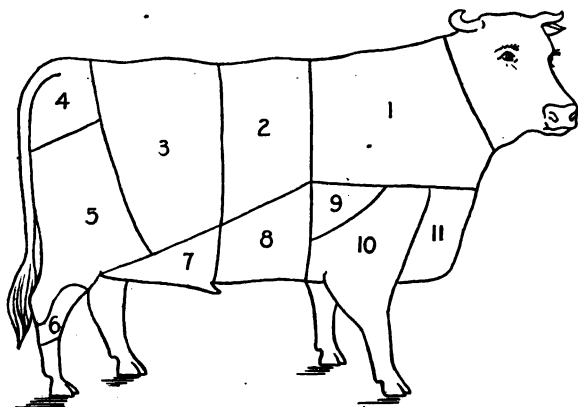


FIG. 1.

1. Chuck
2. Ribs
3. Loin
4. Rump
5. Round

6. Hind Shank
7. Flank
8. Navel End
9. Clod
10. Fore Shank

11. Brisket

USES OF CUTS OF BEEF

The chuck is excellent for stews. It makes a very good roast and is sometimes sold as steaks.

The ribs are sold for roasts, being cut into one, two, and three-rib pieces.

The loin includes the porterhouse, sirloin, and tenderloin steaks. They are the choicest and highest priced cuts in beef.

The rump contains the end of the hip bone and the joint. The fleshy part makes very good steaks and roasts.

The round consists of a very juicy, lean muscle and contains but little bone. It is sold for roasts, steaks, beef tea, and beef juice.

The shanks are cut from the fore and the hind legs. They are tough and contain bones and tendons. They are used for soups and stews.

The flank is boneless and coarse-grained but good in flavor. It makes a good rolled roast, or it may be used for stews.

The navel and clod are used for soups and stews.

The brisket makes a good pot roast; or it may be used for soups and stews.

Fish.—Fish is an important source of protein and may be used in the diet very much as meat is. It often contains less fat than meat and so has a lower fuel value, pound for pound. As a

source of fuel, therefore, lean fish, such as cod, might seem less economical even at a lower price than such cuts of beef as sirloin steak; but as a source of protein (the most expensive nutrient) it is much cheaper. The common practice of cooking fish with fat tends to compensate for its low fuel value.

The different kinds of fresh fish are best at their peculiar seasons. Out of season they are inferior in flavor and have a disagreeable odor. In choosing fish, avoid those with dull eyes, pale red gills, and dry or easily-loosened scales. If the flesh is so soft when pressed with a finger, that the indentation remains, it is unfit for use.

Fish is often preserved by salting, smoking, or pickling. In these forms it can frequently be obtained more cheaply than fresh. When dried during the preserving process the nutrients become more concentrated, so that even at the same price per pound a given sum would buy more nutrients than if spent for fresh fish. Although dried fish is perhaps not to be recommended for very young children, there is no reason to suppose that when properly prepared it is not perfectly wholesome for normal adults. Good canned fish also offers a convenient and economical substitute for fresh fish or for meat.

LESSON III—SECTION B

COOKERY OF MEATS

Fresh meat is firm to the touch and bright in color, red in the case of beef and mutton and reddish pink in the case of pork and veal. The fat should be dry enough to crumble easily, and, in the case of beef, should be of a yellow color. The best beef is marbled with narrow lines of fat. When received from the market, meat should be taken from the paper and wiped thoroughly with a damp cloth. It should be covered and put in a cool place.

Tender meats should be cooked in their own juices to preserve the flavor. The juice may be kept in by hardening the albumin on the outside by means of high heat, as is the case when a broiled steak is put near the hot coals or a roast into a very hot oven. The temperature should then be lowered. There are three general ways of cooking tender meats: over hot coals, or broiling; pan broiling, or sautéing; and roasting. Less commonly tender meat (veal cutlet or chicken, for example,) is fried, either plain or crumbed, in deep fat.

METHODS OF COOKING TENDER MEATS

Broiling.—Place the meat on a greased broiler over hot coals or under the gas flame. Quickly sear over both sides to retain the juices; continue to turn often. Steak 1 inch thick will be cooked rare in 5 minutes, and well done in 6 minutes. There is a difference of opinion as to the best time to season broiled meat. If the seasonings are added before the broiling they penetrate the meat more thoroughly, but, on the other hand, the salt tends to draw out the juices. It is therefore better to add the seasonings at the end, to prevent waste of material.

Pan Broiling.—Have the frying pan very hot and then grease it over with a small amount of fat. Bits of suet may be used for this purpose. Sear the meat over on both sides; then cook more slowly, turning the meat often. When sufficiently cooked, remove to a hot platter and serve.

A thick brown sauce or gravy may be made by stirring flour smoothly into the fat in the pan and then gradually adding hot water, stirring all the time. The method and proportions are the same as used in making white sauce. (See p. 52.)

Roasting.—Season the meat and dredge with flour. The starch grains of the flour under the influence of heat will form a pasty covering which

will aid in retaining the juices of the meat. Place uncovered on the grate in the oven of a coal range or in a hot gas range, and sear over, turning with a fork until the searing is complete. Then pour in at the side enough hot water to cover the bottom of the pan and place the pan on the bottom of the oven, if a coal range is used. The meat should be frequently basted. A covered roasting pan is very desirable. The water is then poured into the lower pan after the meat is seared over and the cover put on. Basting is then unnecessary, as the steam will keep the meat moist. Allow fifteen minutes for each pound of meat and, if the roast is more than 4 pounds, fifteen minutes more for the heat to penetrate. Brown sauce may be made in the pan after the roast is removed.

METHODS OF COOKING TOUGH MEATS

The principle followed in cooking tough meats is to cook slowly at not too high a temperature keeping the meat moist. Pot roasting, stewing and casserole cooking are examples.

Pot Roast.—Tough cuts are used for pot roasts. The meat should be put into boiling water and boiled for ten minutes until the albumin is hardened on the outside, to retain the juices. Seasonings should then be added and the meat cooked

slowly until it is tender. The latter process can be carried out very successfully in a fireless cooker. If desired, the roast may be browned in the kettle by letting the water simmer away. When the roast is removed a brown sauce may be made in the regular way. If the meat is removed before browning and a sauce made in which the roast is cooked, it is necessary to stir the flour until free from lumps in a small portion of water before adding it.

Soup.—If soup is desired the meat should be placed in cold water and brought to the simmering point. Cook slowly until the fibers fall apart and seem tasteless. A good order for soup stock consists of four pounds of soup meat beef; one knuckle of veal, well broken; and one pound of marrow bone. In ordering any kind of meat ask that the trimmings and bones be sent, as they may be used to replenish the soup stock.

Stewed Meats.—In stewing meats we have a two-fold purpose; that is, to keep part of the juices in to retain the flavor of the meat, and to extract part of the juices to flavor the gravy. This may be accomplished by putting the meat into cold water and quickly bringing it to the boiling point. It should then be cooked slowly until tender.

HAMBURG STEAK—PAN-BROILED

(HOME RECIPE)

1 lb. chopped round steak	1 t. onion juice or slice of
1 t. salt	onion chopped
$\frac{1}{8}$ t. pepper	1 t. chopped parsley (?)

(INDIVIDUAL RECIPE)

2 t. chopped meat	$\frac{1}{8}$ t. onion juice
$\frac{1}{8}$ t. salt	$\frac{1}{8}$ t. chopped parsley

Method.—Mix meat and seasonings thoroughly and shape into cakes. Heat a frying pan and rub over it just enough fat to make the surface glossy. Pour off any excess fat. Sear one side of the meat cake, turn and sear the other side. Keep turning every 10 seconds until the meat is cooked through. The center should be light pink and juicy. It is overcooked if the meat is brown and dry.

BEEF STEW

(HOME RECIPE)

1 lb. beef	1 t. salt
4 potatoes	$\frac{1}{8}$ t. pepper
1 carrot	Water to cover
1 turnip	1 tb. flour to 1 qt. water
1 onion	

(INDIVIDUAL RECIPE)

$\frac{1}{4}$ c. meat	Speck of pepper
1 slice potato, onion, carrot, and turnip	1 c. water
$\frac{1}{4}$ t. salt	$\frac{1}{4}$ tb. flour

Method.—Put the meat in a saucepan, cover with water, and bring quickly to the boiling point. Reduce the temperature and simmer for 2 hours, or until the meat is tender. Wash,

pare, and cut vegetables into cubes and add $\frac{1}{2}$ hr. before meat is done. Moisten the flour with water, add to the stew when done and let boil up once before serving.

DUMPLINGS

(For Use With Beef Stew)

(HOME RECIPE)

1 c. flour	$\frac{1}{2}$ t. salt
2 t. baking powder	6 tb. milk or water

(INDIVIDUAL RECIPE)

$\frac{1}{4}$ c. flour	Speck of salt
$\frac{1}{2}$ t. baking powder	2 tb. milk

Method.—Sift flour, baking powder, and salt in a bowl, then stir in the liquid gradually. Drop the batter from a spoon on top of the stew and cook 20 minutes with pan uncovered.

REFERENCES

Economical Use of Meat in the Home. By C. F. Langworthy and Caroline L. Hunt. Pp. 43. 1910. (U. S. Department of Agriculture, Farmers' Bulletin 391.)

Mutton and Its Value in the Diet. By C. F. Langworthy and Caroline L. Hunt. Pp. 32, Figs. 2. 1913. (U. S. Department of Agriculture, Farmers' Bulletin 526.)

Poultry as Food. By Helen W. Atwater. Pp. 39. 1903. (U. S. Department of Agriculture, Farmers' Bulletin 182.) Price, 5 cents.

Fish as Food. By C. F. Langworthy. Pp. 32. 1907. (U. S. Department of Agriculture, Farmers' Bulletin 85.) Price, 5 cents.

Canned Salmon: Cheaper Than Meats, and Why. Pp. 11. 1914. (U. S. Department of Commerce, Bureau of Fisheries Economic Circular 11.)

Sea Mussels: What They are and How to Cook Them. Pp. 5, Fig. 1. 1914. (U. S. Department of Commerce, Bureau of Fisheries Economic Circular 12.)

Commercial Possibilities of the Goosefish: A Neglected Food; with 10 Recipes. Pp. 5. 1914. (U. S. Department of Commerce, Bureau of Fisheries Economic Circular 13.)

Oysters: The Food That Has not "Gone up." Pp. 16. 1915. (U. S. Department of Commerce, Bureau of Fisheries Economic Circular 18.)

The Tilefish: A New Deep-sea Food Fish. Pp. 6, Figs. 2. 1915. (U. S. Department of Commerce, Bureau of Fisheries Economic Circular 19.)

The Food Value and Uses of Poultry. By Helen W. Atwater. Pp. 1916. (U. S. Department of Agriculture Bulletin 467.) Price, 5 cents.

LESSON IV—SECTION A

MILK AND EGGS

Milk and eggs are extremely important foods, particularly in the diet of the young and of invalids. Eggs contain only a trace of carbohydrate. Milk contains milk sugar but no starch. In general, neither needs cooking except to make it more palatable, and in the case of milk, to lessen the danger from harmful bacteria. As eggs and milk, like meat, contain much protein as compared with other nutrients, cooking at a low temperature is desirable so that they may be soft and under, rather than over-cooked.

Great care should be used in handling milk. We should demand that it be forwarded and delivered to us in a sanitary condition. The milk bottle should be carefully washed before the cover is removed. The milk may be left in the bottle until used, or, if preferred, poured into a freshly scalded and covered vessel. It should be set in a cool, clean place, free from dirt, flies, etc. If left at a temperature of 50° F. or less, good milk should remain sweet for twenty-four hours or more.

Much of the milk sold by dealers is pasteurized. This is to be distinguished from sterilized milk. Pasteurization is accomplished by bringing milk to a temperature of 60° to 65° C. (140° to 149° F.) and holding it there for twenty minutes. Sterilizing milk means boiling it for a certain length of time or heating it nearly to the boiling point, allowing it to stand for some hours, and again heating it, repeating the operation several times. Boiled milk is very difficult for children to digest. Pasteurized milk is preferable to boiled milk for this reason. It should not be necessary to depend on sterilizing or pasteurizing as a means of providing germ-free milk. The milk should be produced under clean conditions, even if it is to be pasteurized. Where there is any doubt as to the sanitary quality of the milk, it should be pasteurized. Pasteurized milk is much better for children than raw milk of questionable quality. It is the opinion of many authorities that babies fed on pasteurized milk thrive fully as well as those fed on raw milk.

Eggs spoil because of the action of bacteria which are either included in them before they are laid, or, less often, enter later through the pores of the shell. Eggs should be kept in a cool, clean place.¹

During the season when eggs are plentiful it is

economical to buy a supply and preserve them. The best method of preservation is by the use of water glass, which may be obtained at a drug store and diluted with water in the proportion of one part of water glass to five parts of pure water. Place the eggs in a clean stone jar and pour in the solution, leaving two inches of the liquid covering the top layer of eggs, and set in a cold place.

Only clean, fresh eggs should be preserved. A good, fresh egg has a rough, dull shell and should not be smooth and shiny. If you are in doubt as to the freshness of eggs, candle them or see whether they sink when placed in a dish of fresh water. If an egg sinks it is reasonably fresh.

LESSON IV—SECTION B

COOKERY OF MILK AND EGGS

CORNSTARCH PUDDING

(HOME RECIPE)

2 c. milk	$\frac{1}{2}$ c. sugar
3 tb. cornstarch	$\frac{3}{4}$ t. vanilla, or
	1 sq. chocolate (melted)

(INDIVIDUAL RECIPE)

$\frac{1}{2}$ c. milk	1 tb. sugar
1 t. cornstarch	$\frac{1}{8}$ t. vanilla, or
	$\frac{1}{8}$ sq. chocolate

Method.—Melt chocolate, if used, in top of double boiler; add milk (reserving $\frac{1}{2}$ c. for home recipe and 1 tb. for individual recipe to mix cornstarch in), and sugar. Stir cold milk and cornstarch until smooth and add gradually to hot mixture in double boiler, stirring constantly. Cook 10 minutes, or until trace of spoon is apparent when stirring. Add vanilla, pour into mold rinsed in cold water, and set aside to cool. Serve with whipped cream, cream and sugar, soft custard, or chocolate sauce.

BOILED CUSTARD

(HOME RECIPE)

1 c. milk	$\frac{1}{2}$ t. flavoring
1 egg	1 tb. sugar
	f.g. salt

(INDIVIDUAL RECIPE)

$\frac{1}{4}$ c. milk	4 drops of flavoring
1 tb. egg	1 t. sugar.
f.g. salt	

Method.—Heat the milk in a double boiler. Beat the egg and add it to the sugar and salt. When milk is steaming hot, pour it over mixture, stirring constantly. Return to top of double boiler (have water in bottom of boiler below boiling point), and cook until it creams on the spoon. Remove from hot water, add flavoring, and pour into dish to cool.

BAKED CUSTARD

Use same ingredients as for boiled custard. Beat the egg slightly; add sugar, salt, milk and flavoring. Place in cups or baking dish in pan of hot water and bake until firm. Keep water in pan just below boiling point. When baked a silver knife inserted comes out clean. Remove from oven and serve cold.

SOFT AND HARD COOKED EGGS

(INDIVIDUAL RECIPE)

Put eggs into boiling water allowing one pint to each egg; cover closely and remove to cooler part of the stove. Let stand for five minutes for soft eggs and forty-five minutes for hard eggs.

POACHED EGG

(Individual Recipe)

Boil water in frying pan. Add salt, 1 t. to 1 qt. of water. Draw to cooler part of the stove and carefully slip in the egg, which has been broken in a saucer. Cover and cook until white is firm. Take up carefully with skimmer, season and serve on toasted bread.

PLAIN OMELET

(INDIVIDUAL RECIPE)

1 egg	Pepper
1 tb. water	$\frac{1}{2}$ teaspoon butter
Salt	

Beat egg only enough to mix it, and add water, salt, and pepper. Melt butter in frying-pan but do not let it burn. See that the pan is evenly buttered, but pour off any unnecessary melted butter. With a knife draw away the cooked part from the side of the pan, so the liquid may run under. When cooked, fold, turn on a hot plate.

FOAMY OMELET

(INDIVIDUAL RECIPE)

Beat white of egg until stiff. Beat yolk, add 1 tb. water and beat until light. Add salt and pour slowly into beaten white of egg. Mix carefully. Turn mixture into buttered pan, and cook until a delicate brown underneath. Then place in oven until the top is dry. Fold, and serve on hot platter.

CREAMY EGG

(INDIVIDUAL RECIPE)

1 egg	$\frac{1}{2}$ tb. butter
$\frac{1}{4}$ cup warm milk	Pepper
$\frac{1}{4}$ t. salt	

Beat egg slightly, and add butter, salt, and pepper. Pour milk over egg and cook in a double boiler over gently boiling water. As it thickens, stir it slowly from the side and bottom, that it may cook evenly. Cook until it is of soft, creamy texture, remove from fire and serve at once.

EGG VERMICELLI

(INDIVIDUAL RECIPE)

1 hard cooked egg	Salt
1 t. butter	Pepper
1 t. flour	$\frac{1}{4}$ c. milk

Separate yolk and white of egg. Keep yolk warm, and chop the white. Make a white sauce, add to it the chopped white, and heat thoroughly. Pour the mixture over toast, and sprinkle the yolk over it, pressing it through a strainer. The white of the egg may be put through a strainer also, which saves dishes.

REFERENCES

Eggs and Their Uses as Food. By C. F. Langworthy. Pp. 40. 1906. (U. S. Department of Agriculture, Farmers' Bulletin 128.) Price, 5 cents.

The Care of Milk and Its Use in the Home. By George M. Whitaker, L. A. Rogers, and Caroline L. Hunt. Pp. 20, Fig. 1. 1910. (U. S. Department of Agriculture, Farmers' Bulletin 413.)

LESSON V—SECTION A

CEREALS—GENERAL DISCUSSION

The cereals represent a fairly complete food, that is, one in which all the food principles are represented in good proportions. They are grown in all parts of the world except the arctic regions and therefore form staple foods of all countries. They are widely grown, easily stored in good condition, usable in many ways, may be readily prepared for the table, and are palatable and digestible.

A study of the table shows that the cereals vary as to the proportion of nutrients but that carbohydrates predominate in all grains. The carbohydrates are mainly in the form of starch and this determines the general method of cereal cookery. The starch grains are stored up in cells whose walls are a tough cellulose. High temperature and long continued cooking are necessary to break down the cell walls and to free the starch grains so that they may be acted upon by the digestive juices.

The cereals are prepared for the table in a great variety of ways. Wheat, corn, and rye are the

grains which are most frequently ground into flour and used for breads. Buckwheat is used for griddle cakes. Served with gravy or butter and syrup, buckwheat cakes are high in energy value. Rice is a valuable food and may well be used frequently as a vegetable or prepared as a dessert. Among the cereals used for breakfast foods, oats are very valuable. Oatmeal is not only highly nutritious but it gives bulk which is necessary for digestion and excretion.

FLOUR MIXTURES

Flour mixtures are divided into two chief classes—batters and doughs. Each class may be subdivided. A batter may be made of one part liquid to one part of flour, and is then termed a thin batter; or, it may be made in the proportion of one part of liquid to two parts of flour and then forms a thick batter. A dough made in the proportion of one part liquid to three of flour is called a soft dough; and if the proportion is one part liquid to more than three of flour, it is then a stiff dough. Griddle cakes, popovers, and ginger bread are types of thin batter. Cakes come under the head of thick batters, and the proportions should be kept in mind when a new recipe is being considered. The breads and pastry come under

the soft doughs, while cookies and crullers are stiff dough.

Flour mixtures are raised or made light by means of leavens. The leavens most commonly used in bread making and for similar purposes are steam, air, and carbon di-oxide. The carbon di-oxide may be due to the growth of yeast or to the action of chemicals such as cooking soda and cream of tartar. The desired results are brought about by the action of definite physical laws, namely: that water converted into steam produces a force which tends to expand a mixture enclosing it, and that air or gas (carbon di-oxide), also expands when heated, producing a similar result. The flour is sifted and the egg is beaten to catch and hold the tiny quantities of air which may expand and make the mixture light, under the influence of heat during cooking.

In using recipes for flour mixtures, remember that flour should always be sifted before measuring and that measurements should always be accurate, a knife being used to level off the flour at the top of the measuring cup or the baking powder in the tea spoon. If care is used there is no such thing as "luck" in baking; the results are always the same if the conditions are always the same.

U.S. Department of Agriculture
Office of Experiment Stations
A. C. True, Director

Prepared by
C. F. LANGWORTHY
Expert in Charge of Nutrition Investigations

COMPOSITION OF FOOD MATERIALS.

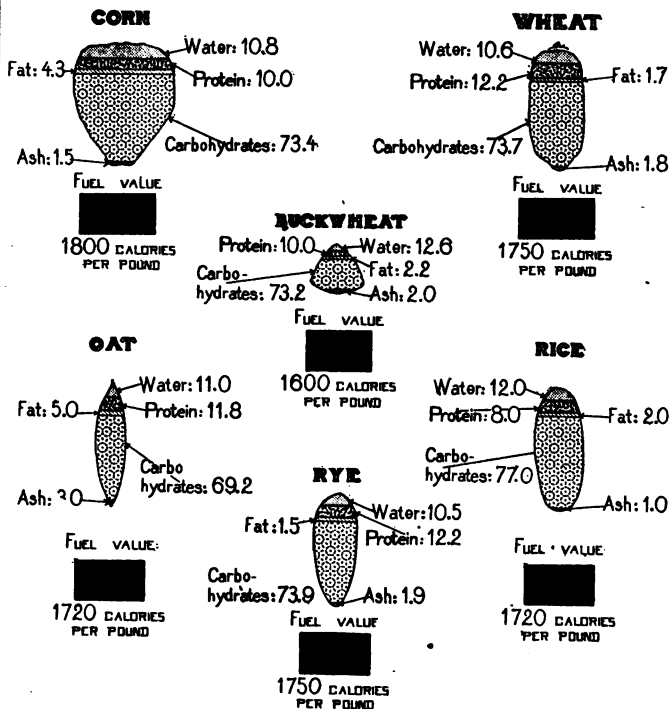


FIG. 2

LESSON V—SECTION B
MAKING OF CAKE AND PASTRY
CAKE MAKING

All cakes may be classified under one of two headings; that is, they either contain fat and are then called butter cakes, or they do not contain fat, and are then called sponge cakes. The general method of handling each type is illustrated by the "plain cake" and the "hot water sponge cake." If a butter cake of very fine quality is desired, separate the egg, using only the beaten yolk at first, then fold in the beaten white just before the mixture is poured into the baking pan.

GENERAL RULES FOR BAKING

In baking, divide the time into quarters. First quarter, mixture should begin to rise.

Second quarter, mixture continues rising and begins to brown.

Third quarter, mixture continues browning.

Fourth quarter, mixture finishes baking and shrinks from pan.

Cake should often be looked at during the baking. If the oven door is opened and closed carefully there is no danger of the cake falling.

Cake should not be moved in the oven until it is fully risen. After this time it may be moved so that it will brown evenly.

Cake, when done, shrinks from the pan and does not retain indentation if pressed with the finger. It is wise to test with a small toothpick. If the toothpick comes out clean the cake is thoroughly done.

Cake will crack if too much flour has been used, or if the oven is too hot.

PLAIN CAKE

(HOME RECIPE)

1 $\frac{1}{4}$ c. flour	$\frac{1}{2}$ c. sugar
2 $\frac{1}{2}$ t. baking powder	1 egg
$\frac{1}{4}$ t. salt	$\frac{1}{2}$ c. milk
$\frac{1}{4}$ c. butter or other shortening	$\frac{1}{2}$ t. vanilla

(INDIVIDUAL RECIPE)

5 tb. flour	3 tb. sugar
$\frac{1}{2}$ t. baking powder	1 tb. egg
$\frac{1}{8}$ t. salt	2 tb. milk
1 tb. butter or other shortening	3 drops flavoring

Method.—Mix and sift dry ingredients. Cream fat, add sugar and continue creaming and then add beaten egg. Add flour and milk alternately, adding a little flour first to prevent curdling. Stir in flavoring. Bake in moderate oven 20 minutes.

HOT WATER SPONGE CAKE

(HOME RECIPE)

1 c. flour	1 c. sugar
1 $\frac{1}{2}$ t. baking powder	6 tb. hot water
$\frac{1}{4}$ t. salt	$\frac{1}{4}$ t. lemon extract
2 egg yolks	2 egg whites

Method.—Mix and sift dry ingredients and set aside. Beat egg yolks until thick and lemon colored; add $\frac{1}{2}$ the sugar gradually, and continue beating; then add water, remaining sugar and extract. Fold in the flour, and finally the stiffly beaten egg whites. Bake 25 min. in a moderate oven in a buttered and floured shallow pan.

PASTRY

The use of pastry and its ease of digestion is a subject concerning which there is much disagreement. In general, it may be said that a tender, rich pastry is just as fully digested as many more simple foods, but a tough or "soggy" pastry may prove difficult of digestion. In the case of any digestive disorders, especially intestinal, it is wiser to omit pastry from the diet.

Pastry consists of fat and starch which makes it a very concentrated food. It should therefore be considered as a substantial food rather than as a delicacy to be added to an already sufficient meal. More trouble comes from overeating, when pie is used as a dessert at a hearty meal, than from the indigestibility of the pastry itself.

The air incorporated in the mixture and the steam generated from the water used, are the leavens which make pastry light. It is necessary then to sift the flour, to cut in the fat, and to handle the dough lightly so that as much air as possible may become entangled in the mixture. If properly handled, a light, flaky product should always result.

APPLE PIE

CRUST

(HOME RECIPE)

1½ c. sifted flour	½ c. lard or a commercial lard
½ t. salt	substitute
	3½ tb. cold water

(INDIVIDUAL RECIPE)

4½ tb. sifted flour	¼ t. salt
1½ tb. lard or a commercial lard substitute	1 tb. cold water

Method.—Stir flour and salt together, then cut in the shortening with two knives until it looks mealy. Add the water gradually, cutting it in with a knife. When all is moist, turn on a lightly-floured board and roll ⅛ inch thick.

FILLING

Sprinkle lower crust with 2 tb. flour, then add ¾ c. sugar. Pare apples, slice them, and place in orderly manner. Add ¼ t. salt, ¼ t. cinnamon, or few grains of nutmeg, and ½ tb. butter. Cover with upper crust and bake in moderate oven 45-60 min.

(INDIVIDUAL RECIPE)

$\frac{1}{2}$ apple	$\frac{1}{4}$ t. butter
1 tb. sugar	1 t. flour
$\frac{1}{16}$ t. cinnamon or few grains of nutmeg	

REFERENCES

Cereal Breakfast Foods. By Charles D. Woods and Harry Snyder. Pp. 32. 1906. (U. S. Department of Agriculture, Farmers' Bulletin 249.)

Use of Corn, Kafir, and Cowpeas in the Home. By C. F. Langworthy and Caroline L. Hunt. Pp. 12. 1913. (U. S. Department of Agriculture, Farmers' Bulletin 559.)

Corn Meal as a Food and Ways of Using It. By C. F. Langworthy and Caroline L. Hunt. Pp. 24. 1914. (U. S. Department of Agriculture, Farmers' Bulletin 565.)

LESSON VI—SECTION A

CEREALS—BREAD MAKING

Wheat, corn and rye are the grains most commonly used in bread making. The wheat flour is best adapted for bread making as it contains the gluten (a protein) in the right proportions and of the right nature to form a spongy loaf. Except for a slight deficiency in fat, wheat bread is a perfect food and we supply the need by the addition of butter. Rye ranks next to wheat in importance for bread making, but it is best used in combination with wheat, because alone, it makes a heavy, sticky, moist bread. Corn needs to be combined with wheat also, for if used alone the bread is crumbly, owing to the lack of gluten.

In a cross-section of wheat three distinct parts are found; the bran, the endosperm, and the germ. The outside coat or bran is fibrous material, containing valuable mineral matter, protein, and a pigment which gives the wheat a brown color. The germ is the tiny plantlet or embryo. When growing, the little plant needs nourishment before it can get to the earth; so "Mother Nature" stores

up a supply in the endosperm. The endosperm is made of irregular cells, separated by walls of delicate woody fiber or cellulose. Packed away in the cells are tiny grains of starch. The spaces

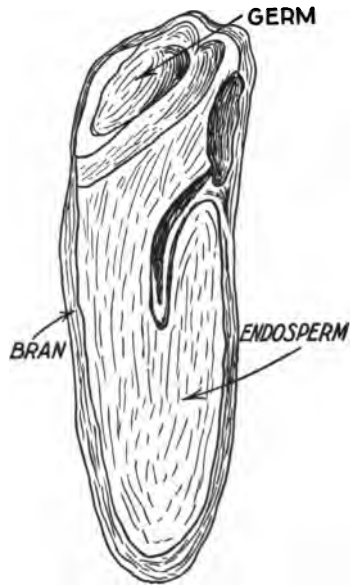


FIG. 3.—CROSS-SECTION OF WHEAT.

between the grains are filled principally with gluten.

There are several varieties of wheat flour, depending upon the part of the grain used. Graham flour is made from the whole grain. The food

value is high because of the presence of the germ which contains a larger portion of fat than the rest of the seed. For this very reason though the flour will not keep as the fat becomes rancid. There is a large proportion of minerals and also of protein, but the protein is stored up in the coarse, indigestible bran; so, graham flour often has a slightly smaller amount of digestible protein than fine white flour. In whole wheat flour the outer

husks and the germ are removed; while in the higher grade white flours all the bran is removed; that is, only the endosperm is used.

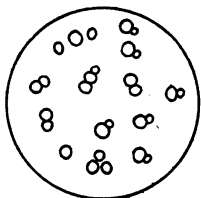


FIG. 4.—YEAST
HIGHLY MAGNIFIED.

Pastry flour is made from winter wheat, which contains less gluten than spring wheat, from which bread flour is made.

The pastry flour is cheaper, being made from lower priced wheat. In using bread flour in place of pastry flour for cakes, etc., the general rule is to use two tablespoons less to a cupful.

Fermented is the term sometimes applied to breads in which yeast is used as a leavening agent. The yeast is a tiny, microscopic plant which grows by the simple process known as budding. Yeast, like any other plant, needs light, heat, and moisture for its growth. The temperature most favor-

able is from 70° to 75°F. If colder than this, its growth may be retarded altogether. Above 90°F. the conditions are favorable for the growth of lactic acid bacteria and the bread "sours." Sugar feeds the yeast; so when added to the sponge it hastens the growth. The starch of the flour is to some extent converted into sugar and thereby serves the same purpose. Salt retards the growth of the yeast somewhat, but we add it because it seems necessary to season the bread to our taste. The soluble carbohydrates are acted upon by the yeast and converted into alcohol and carbon-dioxid. The carbon-dioxid gas becomes entangled in the gluten, and by expansion when heated, raises the bread.

We begin the bread with either a sponge or "hard loaf," using liquid, dry, or compressed yeast. The compressed yeast proves very satisfactory, but should never be used unless light in color and without dark streaks. The bread should be kneaded thoroughly in order to incorporate the ingredients. It should be covered and set in a warm place until its bulk is doubled. The second kneading breaks up the bubbles of gas, thus preventing the formation of large holes in the bread; and spreads the fermentation through the mixture. During the second kneading add as little flour as

possible. Shape and put into greased pans and again let it rise to double its bulk.

The bread is baked to kill the ferment; to render the starch more soluble, and therefore, more digestible; to drive off the alcohol; to expand the carbon-dioxid and thus raise the mixture and to improve the flavor. The oven must be hot enough to raise the loaf to a temperature of 212°F . The best temperature for the oven is from 400° to 500° .

The bread shrinks from the pan when it is done, does not crack, and gives a hollow sound when tapped. Remove from the pan and cover lightly to cool.

LESSON VI.—SECTION B

BREAD MAKING AND COOKING OF BREAKFAST CEREALS

BREAD

(ONE LOAF)

1 c. milk or water	$\frac{1}{4}$ yeastcake (dissolved in $\frac{1}{4}$ c
2 t. lard or other shortening	lukewarm water)
2 t. sugar	3 c. (?) sifted flour
1 t. salt	

(INDIVIDUAL RECIPE)

$\frac{1}{4}$ c. milk	$\frac{1}{4}$ to $\frac{1}{2}$ yeastcake (dissolved in
$\frac{1}{2}$ t. lard or other shortening	1 tb. lukewarm water)
$\frac{1}{2}$ t. sugar	$\frac{3}{4}$ c. sifted flour
$\frac{1}{4}$ t. salt	

Method.—Scald milk or boil water; add shortening, sugar, and salt, and let stand until lukewarm. Add dissolved yeastcake and then flour, stirring until smooth. Remove to floured board and knead until it is easily elastic (15–20 min.). Return to bowl, cover and set in warm place to rise. When the dough doubles its bulk knead into shape, cover and let rise a second time. Bake in moderate oven 45 min. to 1 hr.

A larger proportion of yeast is used in the class recipe in order to secure quicker results. One-half yeastcake is necessary for a two-hour lesson, provided the complete process is shown.

FANCY BREAD

Proceed as above until the second kneading, then rolls of various sorts may be made.

CLEFT ROLLS

After kneading, make into small balls. Set the rolls to rise in a warm place. When they have reached double their size, cut the roll across the top about an inch deep. Brush the top with water and bake until a golden brown.

PARKER HOUSE ROLLS

Add 1 tb. sugar and 2 t. of butter to the dough. Knead thoroughly, then roll to one fourth inch in thickness, cut out with a biscuit cutter, brush lightly with butter, and fold. Place in a greased pan one inch apart. Let rise and bake in a hot oven for ten or fifteen minutes.

BREAKFAST CEREALS

Breakfast cereals are specially milled or otherwise prepared foods, some of which are partially, others thoroughly, cooked at the factory. The uncooked cereal breakfast foods require long and slow cooking in order to break down the cell walls and free the stored starch grains so that they may be readily acted upon by the digestive juices. If a coal range is constantly in use the problem is easily met; otherwise, it is advisable to resort to a fireless cooker. Many forms of fireless cookers

are on the market, but it is easy to make one at home if one understands the principle.¹

Look cereal over carefully, removing any bits of paper from the container or other foreign substance, if found. Stir the required amount of cereal gradually into the required amount of boiling salted water. Boil, stirring constantly, until it begins to thicken. Complete the cooking by steaming.

PROPORTIONS

Amount	Kind	Water	Salt	Time
1 c.	Rice (boiled)	8-12 c.	1 t.	30 min.
1 c.	Rice (steamed)	4 c.	1 t.	1-3 hrs.
1 c.	Granular	2-6 c.	1 t.	30 min.-1 hr.
1 c.	Hominy	4 c.	1 t.	1 hr. +
1 c.	Corn meal	4 c.	1 t.	1-3 hrs.
1 c.	Rolled oats	2-3 c.	1 t.	1-3 hrs.
1 c.	Oat meal	4 c.	1 t.	3-4 hrs.

(INDIVIDUAL RECIPE)

1 tb. cream of wheat

$\frac{1}{8}$ t. salt

$\frac{1}{2}$ c. water

To mold a cereal: Pour any cooked cereal into a dish rinsed in cold water. Let stand until cold.

Fried mush: Cut molded cereal into slices, dip in flour and sauté in hot fat.

Additions to granular cereals: For the sake of variety, dates or figs, cut into pieces, may be added to cereals just before serving, or they may be cooked with the cereals, if preferred.

¹ U. S. Dept. Agr., Farmers' Bul. 771.

Ideal method of ~~cooking~~ cereal: Start it at night and place it in ~~fireless~~ cooker. Reheat in the morning.

REFERENCES

Bread and Bread Making. By Helen W. Atwater. Pp. 47, Figs. 7. 1910. (U. S. Department of Agriculture, Farmers' Bulletin 389). Price, 5 cents.

Cereal Breakfast Foods. By Charles D. Woods and Harry Snyder. Pp. 32. 1906. (U. S. Department of Agriculture, Farmers' Bulletin 249.)

Corn Meal as a Food and Ways of Using It. By C. F. Langworthy and Caroline L. Hunt. Pp. 24. 1914. (U. S. Department of Agriculture, Farmers' Bulletin 565.)

LESSON VII—SECTION A

MEAT SUBSTITUTES

Meats are common sources of protein and fat in the diet. These constituents can be and are obtained from other foods in greater or smaller proportion. Milk and eggs (see Lesson III) and cheese are common substitutes for meat, and so are the dry legumes (beans, peas, lentils, peanuts, etc.). Nuts are also used.

Cheese.—Cheese is a concentrated form of food. It is rich in both protein and fat. In combination with starchy food it may frequently be used as a substitute for meat. Experiments have proved that cheese does not ordinarily cause indigestion and neither is it a frequent cause for constipation.

Cheese should be kept wrapped in a slightly damp cloth or in paraffin paper and then in wrapping paper. It should be kept in a cool place. Never cover cheese in a dish from which the air has been wholly excluded, as it molds more readily under such conditions.

Legumes.—Beans, peas, cowpeas, and lentils contain a larger percentage of protein than other vegetables, and a majority of these show a high percentage of carbohydrate. In addition the

legumes are valuable sources of potassium, phosphorus, iron, and calcium salts.

COMPOSITION OF FRESH AND DRIED LEGUMES COMPARED WITH
THAT OF OTHER FOODS

Farmers' Bulletin No. 121

Material	Water	Protein	Fat	Carbohydrates	Ash	Fuel value per pound
Fresh legumes:	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Calories
String beans.....	89.2	2.3	0.3	7.4	0.8	195
Whole pods of <i>Dolichos sesquipedalis</i>	79.9	4.5	.5	13.9	1.2	365
Sugar peas or string peas...	81.8	3.4	.4	13.7	.7	335
Shelled kidney beans.....	58.9	9.4	.6	29.1	2.0	740
Shelled Lima beans.....	68.5	7.1	.7	22.0	1.7	570
Shelled peas.....	74.6	7.0	.5	16.9	1.0	465
Shelled cowpeas.....	65.9	9.4	.6	22.7	1.4	620
Canned string beans.....	93.7	1.1	.1	3.8	1.3	95
Canned Lima beans.....	79.5	4.0	.3	14.6	1.6	360
Canned kidney beans.....	72.7	7.0	.2	18.5	1.6	480
Canned peas.....	85.3	3.6	.2	9.8	1.1	255
Canned baked beans.....	68.9	6.9	2.5	19.6	2.1	600
Peanut butter.....	2.1	29.3	46.5	17.1	5.0	2,825
Dried legumes:						
Lima beans.....	10.4	18.1	1.5	65.9	4.1	1,625
Navy beans.....	12.6	22.5	1.8	59.6	3.5	1,605
Frijoles.....	7.5	21.9	1.3	65.1	4.2	1,695
Lentils.....	8.4	25.7	1.0	59.2	5.7	1,620
Dried peas.....	9.5	24.6	1.0	62.0	2.9	1,655
Cowpeas.....	13.0	21.4	1.4	60.8	3.4	1,590
Soy beans.....	10.8	34.0	16.8	33.7	4.7	1,970
Chick-pea*.....	14.8	12.4	6.7	63.3	2.8	1,690
Peanuts.....	9.2	25.8	38.6	24.4	2.0	2,560
St. John's bread (caribbean)*	15.0	5.9	1.3	75.3	2.5	1,565
Potatoes.....	78.3	2.2	.1	18.4	1.0	385
Cabbage.....	91.5	1.6	.3	5.0	1.0	145
Tomatoes.....	94.3	.9	.4	3.9	.5	105
Rolled oats.....	7.7	16.7	7.3	66.2	2.1	1,850
Wheat breakfast foods.....	9.6	12.1	1.8	75.2	1.3	1,700
Spring-wheat flour.....	12.3	11.7	1.1	74.5	.4	1,650
Winter-wheat flour.....	11.9	10.7	1.0	75.8	.6	1,650
Lean beef.....	70.0	21.3	7.9	1.1	730
Dried beef.....	54.3	30.0	6.5	.4	9.1	840
Milk.....	87.0	3.3	4.4	5.0	.7	325
Cheese.....	34.2	25.9	33.7	2.4	3.8	1,950
Butter.....	11.0	1.0	85.0	3.0	3,605
Eggs.....	73.7	14.8	10.5	1.0	720

In view of the low cost and high nutritive value, dried legumes should be used frequently; not only as a meat substitute but to give a pleasing variety to the diet.

Care in the preparation of legumes is very important both as regards the digestibility and the flavor. The dried legumes should be soaked over night in water to which a little baking soda has been added. These vegetables require long cooking to soften the cellulose and also to develop the flavor. A little soda added to the water in which they are cooked also aids in softening the cellulose and neutralizes the vegetable acid found in some of the legumes.

Although these foods are comparatively cheap the fuel required to cook them so long a time may increase their cost unless they are prepared on a day when the range is being used for other purposes, as, for laundry. The fireless cooker is satisfactory in cooking these dried foods.

Nuts.—Nuts serve as an excellent source of energy and may replace, to a considerable extent, other proteins in the diet. They are a concentrated food and therefore need, even more than meat, to be accompanied by fresh vegetables or fruits or other watery and bulky foods. When added to an already hearty meal, nuts may be the cause of digestive disturbances.

LESSON VII—SECTION B

COOKERY OF CHEESE, LEGUMES, AND
NUTS

ESCALLOPED CABBAGE

(HOME RECIPE)

2 c. cooked, chopped cabbage	$\frac{1}{3}$ c. grated cheese
1 c. medium white sauce	$\frac{1}{2}$ c. buttered crumbs

(INDIVIDUAL RECIPE)

$\frac{1}{2}$ c. cooked, chopped cabbage	1 tb. grated cheese
$\frac{1}{4}$ c. medium white sauce	2 tb. buttered crumbs

Method.—Melt the cheese in the sauce, add the cabbage, put into a baking dish and cover with crumbs. Brown in the oven.

Other vegetables may be cooked and substituted for the cabbage such as onions, cauliflower, and potatoes.

MEDIUM-THICK WHITE SAUCE

(HOME RECIPE)

2 tb. butter	$\frac{1}{8}$ t. pepper
2 tb. flour	1 c. milk
$\frac{1}{2}$ t. salt	

(INDIVIDUAL RECIPE)

1 t. butter	Speck pepper
1 t. flour	
$\frac{1}{8}$ t. salt	
$\frac{1}{4}$ c. milk	

COOKERY OF CHEESE, LEGUMES, AND NUTS 53

Method.—Melt the butter, add flour and seasonings and cook until frothy. Add the milk gradually, stirring constantly, until the mixture boils up once. Set aside in double boiler until used.

BOILED MACARONI (OR SPAGHETTI)

Break macaroni into one-inch pieces, then put it into boiling, salted water and cook until soft (30 minutes at least). Pour into strainer and turn cold water over macaroni. Macaroni doubles its bulk in boiling.

BAKED MACARONI AND CHEESE

(HOME RECIPE)

2 c. boiled macaroni	1 c. medium white sauce
4 t. grated cheese	Buttered crumbs

(INDIVIDUAL RECIPE)

Use $\frac{1}{4}$ of above recipe.

Method.—In buttered baking dish put layers of macaroni, sprinkled with grated cheese. Pour medium white sauce over it, cover with buttered crumbs and brown in the oven.

BUTTERED CRUMBS

1-2 tb. butter to 1 c. crumbs. Melt butter and stir through crumbs.

BAKED BEANS

(HOME RECIPE)

2 c. beans	1 t. salt
2 tb. molasses or brown sugar	2 oz. salt pork or bacon
$\frac{1}{4}$ t. mustard	

Wash and soak beans overnight. Add a little baking soda and cook until the skins easily slip from the bean (easily deter-

mined by taking a bean on tip of spoon and blowing on it). Add the seasonings and the pork, which has been previously scraped and scored (cut in strips just through the rind).

Cover and bake slowly for 6 to 8 hours; uncover the last hour of the cooking so that the rind of the meat may become brown and crisp. If less seasoning is preferred, the amount of molasses or sugar may be cut down.

BEAN LOAF¹

(HOME RECIPE)

- | | |
|------------------------|---------------------------|
| 2 c. cold, baked beans | 1 tb. finely minced onion |
| 1 egg, beaten | 2 tb. catsup |
| 1 c. bread crumbs | Salt and pepper |

Combine the ingredients and shape them into a loaf. Bake $\frac{1}{2}$ hour. Serve with strips of broiled bacon on top.

BEAN SANDWICHES¹

(HOME RECIPE)

- | | |
|------------------------------|--------------------------|
| 1 c. cold baked bean pulp | Salad dressing enough to |
| 1 tb. melted butter or cream | moisten |
| 1 t. finely minced onion | |

Spread the mixture on thin slices of buttered bread.

NUT LOAF

(HOME RECIPE)

- | | |
|-------------------------------------|-----------------------------------|
| 2 c. soft bread crumbs | 1 $\frac{1}{2}$ t. salt |
| 1 c. chopped nut meats | $\frac{1}{4}$ t. pepper |
| 1 egg | $\frac{1}{2}$ t. good table sauce |
| $\frac{1}{2}$ c. hot water or stock | Few drops of onion juice |

Mix the ingredients and put into a bread pan. Bake 1 hour, basting twice with melted butter.

¹ Cornell Bulletin, Beans and Similar Vegetables as Food by Lucile Brewer and Helen Canon.

REFERENCES

Beans, Peas, and Other Legumes as Food. By Mary Hinman Abel. Pp. 38, Figs. 10. 1906. (U. S. Department of Agriculture, Farmers' Bulletin 121.)

Nuts and Their Uses as Food. By M. E. Jaffa. Pp. 28, Fig. 1. 1908. (U. S. Department of Agriculture, Farmers' Bulletin 332.) Price, 5 cents.

Cheese and Its Economical Uses in the Diet. By C. F. Langworthy and Caroline L. Hunt. Pp. 40. 1912. (U. S. Department of Agriculture, Farmers' Bulletin 487.)

LESSON VIII—SECTION A

VEGETABLES AND FRUITS

Vegetables, except beans, peas and other legumes, are usually poor in protein and fat and owe their nutritive value largely to carbohydrates. The latter consist mainly of starch, cellulose, and small amounts of sugar. They also contain relatively large proportions of important mineral nutrients. It should be remembered that vegetables often are more than half water and that their fuel value is therefore lower than might be supposed from their bulk. This bulk, however, is often useful in the diet (see p. 110) and does not lessen the value of vegetables in the ordinary diet.

In cooking, starchy vegetables should be placed in boiling water or in a hot oven, as the case may be, as experience has shown that this gives the best results. Vegetables should not be salted until they have been cooking about ten minutes, because the salt tends to draw out the juices.

Vegetables having a sweet, mild-flavored juice, as string beans and green peas, should be cooked in a covered utensil in a small quantity of water,

which is served with the vegetable. Vegetables having a strong juice, as onions, cabbage, and cauliflower, should be cooked in an uncovered utensil in a large quantity of water, which is not usually served with the vegetable but which may be used for soup making. In the first class, the purpose is to retain all the sweetness and flavor; in the second class, the purpose is to make the vegetables more palatable and less likely to cause digestive disturbance by modifying the flavor. With potatoes the matter of quantity of water is one of convenience chiefly.

Great care should be taken not to overcook vegetables, as this injures the color and flavor and may make them likely to cause digestive disturbances. Cook only long enough to make them tender.

Fruits.—The nutritive value of fresh fruits, in proportion to their bulk, is low and is due largely to the sugar and the mineral matters present. After drying, fruits are much richer than when fresh, dates, raisins, figs, and prunes containing 50 to 75 per cent. of grape and other sugars. Fruits are valuable in the dietary chiefly because of the salts and acids which they contain and because of the bulk of water and cellulose or woody fiber. These things tend to stimulate digestion and excretion and the mineral salts are important for

body building and for other physiological purposes. Some dried fruits and fruit juices, like many of the fresh fruits, are useful for their laxative properties.

As fruits ripen, starch and similar carbohydrates are changed into sugar, flavor develops, and texture softens. As a whole, fruits are well digested. Stewed fruits, as a rule, are preferable to raw for young children because of the softening of cellulose during cooking and because bacteria which may be in the raw fruit are destroyed.

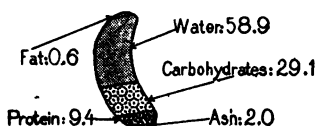
U.S. Department of Agriculture
Office of Experiment Stations
A.C. True, Director

Prepared by
G.F. LANGWORTHY
Expert in Charge of Nutrition Investigations

COMPOSITION OF FOOD MATERIALS.

 Protein
  Fat
  Carbohydrates
  Ash
  Water
  Fuel Value
 1 Sq. In. Equals 1000 Calories

SHELLED BEAN, FRESH.

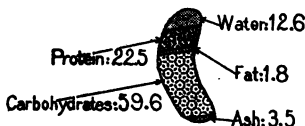


FUEL VALUE:



740 CALORIES PER POUND

NAVY BEAN, DRY.

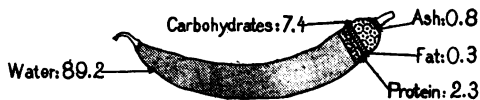


FUEL VALUE:



1600 CALORIES PER POUND

STRING-BEAN, GREEN.



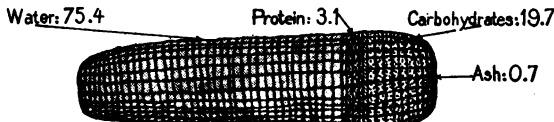
FUEL VALUE:



195 CALORIES PER POUND

CORN, GREEN

EDIBLE PORTION



FUEL VALUE:



500 CALORIES PER POUND

FIG. 5.

U.S. Department of Agriculture
Office of Experiment Stations
A.C. True, Director

Prepared by
G.F. LANGWORTHY
Expert in Charge of Nutrition Investigations

COMPOSITION OF FOOD MATERIALS.

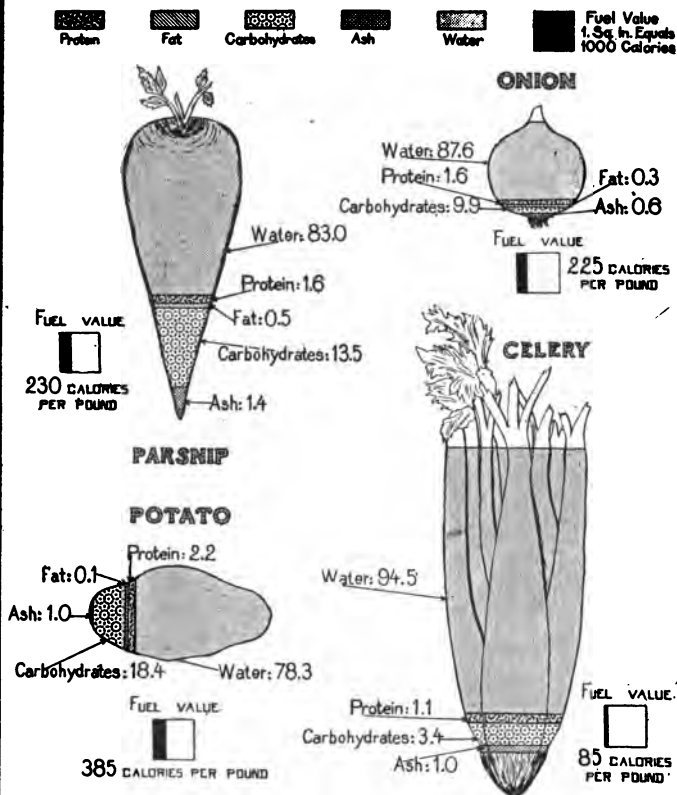


FIG. 6

LESSON VIII—SECTION B

COOKERY OF VEGETABLES

BOILED POTATO

Wash in cold water and remove bruised or decayed places. If skins are removed, put the pared potatoes at once into cold water, so that they will not turn dark. If they are cooked with the skins on, more of the mineral matter just under the skin is retained. If potatoes vary in size, cut the larger ones in two pieces. Put into boiling water and cook until tender. The water should boil all the time, but not too hard. Salt at the end of ten minutes. When tender, drain off the water, remove lid, shake the saucepan gently over the stove, cover with a cloth, and stand on the back of the stove.

BAKED POTATO

Bake in a hot oven from 45 minutes to 1 hour, turning once or twice. When soft, break the skin, to allow the steam to escape, and serve at once.

CREAMED VEGETABLES

To cream vegetables, use one cupful of cooked vegetables, cut into one-half inch cubes, to one cupful of medium-thick white sauce. (See p. 52.) Heat in oven or on top of stove and serve at once.

CREAM OF VEGETABLE SOUPS

Cream of vegetable soups are nutritious and are a palatable dish to serve at luncheon or supper. Great care should be used in combining acid vegetables, such as tomatoes, with milk, as

the milk may curdle and spoil the texture of the dish. A very small quantity of soda added to the purée (strained vegetable pulp) will neutralize the acid and then it may be added to the milk.

GENERAL DIRECTIONS

Cook vegetables until soft. Strain the vegetables and keep the stock in which they are cooked.

Make a thin white sauce, using 1 tb. butter, 1 tb. flour, $\frac{1}{2}$ t. salt, and $\frac{1}{8}$ t. pepper, to 1 c. liquid (milk or stock, or part of each).

Add the strained vegetable (purée) to the white sauce, then reheat and serve at once.

Onion or other seasoning vegetable may be cooked with the vegetables and discarded just before straining.

TOMATO BISQUE

Equal quantities thin white sauce and tomato purée.

(INDIVIDUAL RECIPE)

1 t. butter	f. g. pepper
1 t. flour	$\frac{1}{4}$ c. milk
$\frac{1}{8}$ t. salt	$\frac{1}{4}$ c. strained tomato
$\frac{1}{8}$ t. soda	

Make a thin white sauce. Heat the strained tomato in a saucepan, add the soda. When effervescence has ceased, add slowly to the sauce, stirring constantly. Reheat but do not boil after materials are blended. Note:—If stronger flavor is liked, double the quantity of tomato.

BREAD STICKS

TO SERVE WITH THE SOUP

Cut bread $\frac{1}{2}$ inch thick, spread with butter, cut into lengthwise strips, dust lightly with paprika, and brown in oven.

CROUTONS

Same as bread sticks, except that the strips are cut into cubes and then browned.

REFERENCES

Use of Fruit as Food. By C. F. Langworthy. Pp. 38, Fig. 1. 1907. (U. S. Department of Agriculture, Farmers' Bulletin 293.) Price, 5 cents.

Potatoes and Other Root Crops as Food. By C. F. Langworthy. Pp. 45, Figs. 4. 1907. (U. S. Department of Agriculture, Farmers' Bulletin 295.) Price, 5 cents.

Turnips, Beets, and Other Succulent Roots, and Their Use as Food. By C. F. Langworthy. (U. S. Department of Agriculture Bulletin.) Price, 5 cents.

Green Vegetables and Their Uses in the Diet. By C. F. Langworthy. Pp. 16, Fig. 1. 1912. (U. S. Department of Agriculture, Yearbook Separate 582.) Price, 5 cents.

LESSON IX—SECTION A

DIGESTION

The process of digestion includes the changes which the food undergoes in the digestive tract before it can be absorbed into the body tissue. The food is taken into the mouth where it is ground by the teeth and mixed with the saliva. Some of the starchy portion is changed to sugar by an enzym or ferment, known as "ptyalin," which is present in the salivary secretion. It was formerly believed that this transformation of starch to sugar was largely accomplished in the mouth but it is now recognized that only a small portion of the starch is changed in the mouth. However, this does not lessen the need of thoroughly chewing the food, since it is more readily acted upon by the other digestive fluids in the stomach and intestine after being finely divided and softened by the saliva.

On being swallowed the food goes beyond voluntary control and is carried by the action of involuntary muscles through the esophagus or tube leading from the mouth into the stomach.

In the stomach the food is acted upon by the ferments pepsin and rennin, which are present in the gastric juice, secreted by glands in the walls of the stomach. Mingled with the gastric juice is free hydrochloric acid, the presence of which is necessary to render the pepsin active. The pepsin acts upon the protein components of the food and breaks them down into simpler soluble substances (proteoses and peptones), which in turn undergo further changes in the intestine. The rennin causes the curdling or coagulation of the protein in milk and this seems to be necessary for the action of the pepsin. The explanation of the action of rennin is not definitely known, since the coagulated mass of milk protein must be dissolved again and rennin is present in the stomachs of animals not eating milk as a part of their normal diet. The ferments of the stomach have no effect upon the starchy portion of the food but the action of the ptyalin from the saliva continues for some time after the food reaches the stomach. Generally speaking, the fats in the food are not acted upon by the gastric ferments to any great extent but the cell walls which enclose the fat are dissolved and the fat is set free. The digestive changes which take place in the stomach, like the hydrolysis of starch in the mouth, are regarded as largely of a preliminary character.

From the stomach the food passes into the small intestine through which it is propelled by the peristaltic movements and where the most important digestive changes take place. In the intestine are three secretions—the bile, the pancreatic juice, and the secretions from the glands in the walls of the intestine itself. All of these secretions are alkaline and neutralize the acid brought in with the food from the stomach so that the digestive processes which take place in the intestine are carried out in a slightly alkaline or neutral medium.

The pancreatic secretion contains an enzym known as “pancreatic amylase” or “amylpsin,” which acts like the ptyalin of the saliva and completes the transformation of the starch into sugar. The pancreatic secretion also contains an enzym known as “steapsin” or “lipase,” which hydrolyzes the fatty portions of the food, splitting them up into glycerin and fatty acids. The pancreatic juice contains an enzym, trypsin, which completes the process of breaking the protein components of the food down into peptones and breaks these peptones down still further into simpler compounds, called amino acids.

The secretions of the intestine contain the enzymes maltase, lactase, and invertase, which split the more complex sugars into simpler forms.

After the various components of the food have

been broken down into simpler substances they are absorbed through the walls of the digestive tract by the blood system and utilized by the body. Absorption begins in the stomach where mineral salts and some soluble peptones may be taken up by the blood, but most of it is done in the intestine.

LESSON IX—SECTION B

COOKERY OF FRUITS AND MAKING OF
SALADS

BAKED APPLES

Select apples of uniform size. Wash, and remove core, leaving the blossom end. Fill the cavity with sugar and flavor with lemon juice or cinnamon, if desired. Place apples in baking dish, add enough hot water to cover the bottom of the dish and bake until tender (20 to 45 min.), basting every 10 minutes.

STEWED PRUNES

(HOME RECIPE)

$\frac{1}{2}$ lb. prunes $\frac{1}{2}$ lemon, sliced
1 c. sugar (?)

Wash and soak prunes overnight in water or sweet cider, enough to cover them. Add sugar and lemon to the water and cook 30 minutes. Omit the sugar and lemon if cider is used.

SALADS

Salads.—Salads give a pleasing variety to the diet and if well prepared are both wholesome and palatable. They are made in a great variety of ways and may be composed of meat, fish, vegetables, and fruit, either alone or in combination.

Salads made of fresh green vegetables have little nutritive value except from the dressing served on them and the mineral matters which they sometimes provide. They are suitable to serve at dinner after a substantial course. The material used in them should be crisp and cold and the dressing should be added at the table or just before the salad is served.

Salads of substantial materials such as meat, fish, eggs, and cheese, may well form the main course at luncheon or supper. It is quite common after cutting the materials in the proper shape and form, to mix a little oil and vinegar with them some time before serving, so that these may be absorbed. Such salads are often combined with crisp, fresh vegetables, which should be treated as described in the preceding paragraph.

French dressings are more suitable for light salads of fruit and vegetables; and mayonnaise, cooked, or cream dressings for the heavier salads.

MAYONNAISE DRESSING

(HOME RECIPE)

1 c. olive oil	$\frac{1}{2}$ t. salt
2 tb. beaten egg	f.g. cayenne or paprika
2 tb. lemon juice or vinegar	

Beat the egg with a dover egg-beater; add seasonings, including acid, and then add oil, a teaspoonful at a time, beating after each addition.

BOILED DRESSING

(HOME RECIPE)

2 eggs	3 tb. vinegar
$\frac{1}{2}$ t. mustard	1 tb. butter
$\frac{1}{2}$ t. salt	$\frac{1}{2}$ c. hot water
f.g. cayenne or paprika	

Mix the dry ingredients and beat with the egg until light. Add the vinegar and water and cook in a double boiler, stirring constantly until thick and smooth. Remove from the fire, stir in the butter, and set away to cool.

FRENCH DRESSING

(HOME RECIPE)

4 tb. olive oil	$\frac{1}{2}$ t. salt
2 tb. vinegar	$\frac{1}{4}$ t. pepper

Mix ingredients and stir until well blended. Some prefer to add a few drops of lemon juice.

POTATO SALAD

Dice cold boiled potatoes. Add chopped onion, cucumbers, and hard-cooked egg. Mix lightly with either boiled dressing or mayonnaise. Use enough dressing to make very moist. Serve on lettuce and garnish with hard-cooked egg.

TUNA FISH SALAD

Season finely divided tuna (or more correctly in English, tunny) fish (canned) with lemon juice and allow to stand. Just before serving mix with chopped celery or cabbage and mayonnaise dressing. Serve on lettuce.

COOKERY OF FRUITS AND MAKING OF SALADS 71

BANANA SALAD

Cut bananas lengthwise, dip in mayonnaise or boiled dressing, and roll in ground nut meats. Serve on lettuce.

CHEESE SALAD

Make cream or cottage cheese into balls, roll in chopped nuts, and serve on lettuce with mayonnaise dressing.

REFERENCES

Principles of Nutrition and Nutritive Value of Food. By W. O. Atwater. Pp. 48, Figs. 2. 1902. (U. S. Department of Agriculture, Farmers' Bulletin 142.)

School Lunches. By Caroline L. Hunt and Mabel Ward. Pp. 27. 1916. (U. S. Department of Agriculture, Farmers' Bulletin 712.)

LESSON X—SECTION A

FUEL VALUE AND DIETARY STANDARDS

“A dietary is that amount and combination of food which will keep a person in full health provided he is normal to begin with.” Ellen H. Richards.

A dietary standard is a guide for home and institution management, rather than expressive of physiological requirement, as the U. S. Department of Agriculture points out. The standard for an individual depends upon many conditions. A man doing muscular work in the open air requires more food than a man leading a sedentary life. A man in the prime of life needs more food than either an older man or a boy. In general, a man needs more food than a woman because of his larger body and more vigorous life. Individuality plays an important part in choosing food for a particular person. A person may like this or that and refuse to touch what he does not like. This is largely the result of training. A child should be taught to eat a variety of foods, including fruits and vegetables. Climate and season

affect the appetite. In cold weather more heat-producing foods are needed, provided a person spends much time out of doors.

Scientists have estimated that as a general rule a man at active work needs about 3000 calories of food per day; that a woman needs about 2400 calories per day; that a boy from ten to sixteen years of age needs 2400 to 2700 calories of food per day. If very active, as he is when playing football or other active games, or at work, the boy needs a diet with much higher energy value—3000 or 4500 calories, even. A girl from ten to sixteen years of age needs from 1800 to 2400 calories per day. A younger child needs from 900 to 1500 calories per day. The protein is less definitely determined than the energy, but 80 to 100 grams for 3000 calories of energy is a generally accepted figure. The dietary standard, to be consistent, should include figures for mineral matter, but these are difficult to give. It is generally assumed, therefore, that a mixed diet including milk and vegetables and supplying 3000 calories per day will provide the needed mineral matter.

These figures express amounts of food, which seem rather difficult to understand, but when, in addition, the proportion of nutrients is considered, the problem is difficult. It is not possible for the

* SOME COMMON FOODS GROUPED ACCORDING TO THEIR CHARACTERISTICS
(All five groups should be represented in the diet every day)

Group 1		Group 2		Group 3		Group 4		Group 5	
		Carbohydrates							
Food characterized by protein portions		Food characterized by starch and similar carbohydrates		Food characterized by sugar portions		Food characterized by fats		Food characterized by minerals and other organic acids	
Approximate 100 calorie portions		Approximate 100 calorie portions		Approximate 100 calorie portions		Approximate 100 calorie portions		Approximate 100 calorie portions	
Lean meat	1 slice	Bread, slices	{ 2½ bakers 1 home made 3 or 4 ¼ c. 2-3 tb.	Sirup	1½ tb.	Butter	1 tb.	Spinach	¾ c. (cooked)
Poultry	Thin slice			Honey	4 tb.	Cream	2 tb.	Peas	3 tb.
Fish	1 serving	Crackers		Jellies	1 tb.	Top-milk	¼ c.	Lettuce	10 servings
Oysters	¼ c.	Macaroni		Dried fruits	3-4 pieces	Lard and other culinary fats	¼ tb.	Potatoes	1 medium size
Milk	½ c.	Rice		Candy	½ stick	Salt pork	½ slice	Turnips	1½ c. (cooked)
Cheese	2 small servings	Cereal breakfast foods, meals, and flours		Sugar	2 tb.	Bacon	½ thin slice	Apples	2
Eggs	1, large	And other cereal foods.		And other sweets.		Chocolate	½ sq.	Oranges	1, large
Dried legumes	2 tb.					And other fatty foods.		Berries	1 c.
Nuts	8-10							And other vegetables and fruits, raw or cooked.	
And other protein-rich foods.									

* The list of foods and the classification are quoted from "Food Selections for Rational and Economical Living," by C. F. Langworthy. American Home Economics Association, Baltimore, Md., 1934. The calorie portion data have been added for convenience in making calculations of meals.

average housewife to attempt to make accurate dietetic calculations. In fact, after the calculations were made it would be necessary to see that each individual at the table had his particular portion if he were to have a so-called "balanced ration."

The problem has been simplified by Dr. C. F. Langworthy, and the preceding table with the suggestions for its use are based upon his work.

"The division must be more or less arbitrary, for some foods could go almost equally well in two or more groups. Thus milk, which is a general food, is included with the protein foods because it is a valuable source of this nutrient." Potatoes contain a large percentage of starch but their value for minerals has been used to determine their grouping.

To obtain a fair estimate of the amount of food required by an individual, the approximate 100 calorie portions may be used. Suppose John is an adult at active work. He needs about 3000 calories of food. His meals may consist of the following menus, and this single illustration which can not be said to represent an unusually generous diet and which yet furnishes 3000 calories of energy, shows that people probably err in eating too much rather than in eating too little.

BREAKFAST

2 eggs.....	200 calories
2 slices of toast.....	200 calories
2 tb. butter.....	200 calories
1 tb. cream (in coffee).....	50 calories
1½ t. sugar (in coffee).....	25 calories
Total.....	675 calories

DINNER

2 slices of lean meat.....	200 calories
2 medium-sized potatoes.....	200 calories
6 tb. peas.....	200 calories
2 slices of bread (home made).....	200 calories
3 tb. butter.....	300 calories
1 baked apple.....	50 calories
1 tb. sugar.....	50 calories
¼ c. top milk.....	100 calories
Total.....	1300 calories

SUPPER

¼ c. macaroni.....	100 calories
2 small servings of cheese.....	100 calories
¾ c. milk.....	100 calories
2 slices of bread (home made).....	200 calories
2½ tb. butter.....	250 calories
¾ c. berries.....	75 calories
2 tb. sugar.....	100 calories
¼ c. top milk.....	100 calories
Total.....	1025 calories

There is much evidence for the conclusion that a man in the period of full vigor, weighing 150

pounds, and engaged in moderately active, physical work requires about 100 grams of protein per day. Dr. Langworthy states that a mixed diet which includes the five food groups (see table p. 74)" and which supplies from 3000 to 3500 calories of energy per day almost inevitably supplies the needed protein, ash, and other constituents also. The diet is more likely to meet this requirement when milk is included in it. "To be more exact a dietary standard should also include figures expressing mineral requirements and requirements for vitamins (regulating substances) of which minute amounts at least are essential. With present knowledge it is difficult to give such data. It is believed, however, that a general mixed diet will provide what is needed of both these."

LESSON X—SECTION B

PREPARATION OF A BREAKFAST

MENU

Grape Fruit

Rolled Oats

Cream

Wheat Muffins

Butter

Coffee or Cocoa

GRAPE FRUIT

Cut into two parts and remove the seeds. With a thin, sharp knife cut around the fruit next to the skin and then free each section from the membrane at the sides. With shears cut the center pith at the bottom, and lifting this remove the membrane as a whole. Sweeten and serve very cold.

ROLLED OATS

(HOME RECIPE)

1 c. rolled oats

2 to 3 c. boiling water

1 t. salt

Cook 1 to 3 hr.

Method.—Look the cereal over carefully. Stir the cereal gradually, into the required amount of boiling, salted water. Boil, stirring constantly, until it begins to thicken. Complete the cooking by steaming (using double boiler).

MUFFINS

(HOME RECIPE)

1 $\frac{3}{4}$ c. flour

$\frac{3}{8}$ c. milk

3 t. baking powder

1 $\frac{1}{2}$ tb. melted lard or other fat

1 t. salt

1 egg

1 $\frac{1}{2}$ tb. sugar

Method.—Mix and sift dry ingredients. Add gradually, the milk, the egg, (well beaten), and the melted fat. Bake in greased muffin pans for twenty-five minutes.

BOILED COFFEE

(HOME RECIPE)

$\frac{1}{2}$ cup coffee	3 c. boiling water
$\frac{1}{2}$ egg or 1 shell	1 c. cold water

Method.—Mix the coffee, egg and $\frac{1}{2}$ the cold water ($\frac{1}{2}$ c.) in a clean, hot coffee-pot. Pour boiling water over it and boil 3–5 min. Remove to a warm place, add the remaining cold water and let the coffee stand 10 to 15 min. Serve in warm cups.

COCOA

(INDIVIDUAL RECIPE)

2 t. cocoa	$\frac{1}{4}$ c. water
2 t. sugar	Speck of salt
$\frac{1}{2}$ c. milk	

Method.—Add salt to milk. Put cocoa, sugar, and water into a saucepan and cook to a paste, stirring constantly. When paste becomes so thick that the spoon leaves its trace, add the milk by degrees. Let boil once. Remove from fire and beat with a Dover egg beater until top is covered with close froth. Beating prevents formation of skin on the top.

REFERENCES

Principles of Nutrition and Nutritive Value of Food. By W. O. Atwater. Pp. 48, Figs. 2. 1902. (U. S. Department of Agriculture, Farmers' Bulletin 142.)

Food Customs and Diet in American Homes. By C. F. Langworthy. Pp. 32. 1911. (U. S. Department of Agriculture, Office of Experiment Stations Circular 110.) Price, 5 cents.

LESSON XI—SECTION A

BILL-OF-FARE MAKING

In making out a bill-of-fare, a consideration of the various nutrients is important. Dr. C. F. Langworthy has simplified this part of the problem so that guided by the table on page 74, it is possible to plan meals furnishing the nutrients in fairly accurate proportions. In using the lists from the table to form menus, it is necessary that each group be represented, if not at every meal, at least once a day. "The use of an excessive number of food materials from any one group would result not only in making less appetizing meals but an undesirable proportion of food principles."

The natural appetite tends to protect people from eating too much of one kind of food. With a few exceptions like bread and butter, the same kind of food should not be served twice at the same meal. Bean soup followed by a main course including baked beans would pall the sense of taste. Avoid monotony. It may be convenient for the housewife always to serve corned beef on Monday, hash on Tuesday, and so on, but it is very undesirable as far as attractiveness is

concerned. A schedule for 14 days can be much more safely used than one for 7 days. A knowledge of what is to be served often causes the mind to rebel against the food and this results in a loss of appetite. On the other hand, a surprise due to an unexpected dish stimulates the appetite.

The market order must be carefully made out so that the supplies shall be at hand when the preparation for a meal begins. A thrifty housekeeper plans her meals so well that there are few remnants except those she definitely desires for one of the many palatable "left-over" dishes. It is cheaper to buy food in large quantities but this is possible only when there is a suitable place for storage.

The cost of food must be considered in planning meals. It is necessary to remember that the cheapest food is not always the most economical. If we buy a cheap cut of meat it is usually tough, and by the time it is cooked and the cost of the gas added to the first cost it may prove more expensive than a more tender piece. However, if there is a fire in the coal range, anyway, or if a fireless cooker is used, there is economy in the cheaper cut. Vegetables and fruits used out of season are no more nourishing than when they are more abundant and cheaper and they are an extravagance for the average family.

Unnecessary waste should be avoided. Some vegetables and fruits have to be pared, cored, etc., but the waste may be reduced to the minimum. Potatoes may be carefully scrubbed and then boiled, and the outside skin removed before they are served. The flavor is not only better but the valuable mineral matter is retained. Ask the butcher to send home the trimmings of meat. The bones and lean meat may be used for soup stock. The fat can be tried out and used for shortening. Chicken fat thus prepared is excellent for cake.

Labor spent in the preparation of food should be considered. Is not the housewife's energy of some value? A mother might far better prepare simpler meals, even though they are somewhat more expensive, than to work so hard that she comes to the table too tired to enjoy the meal with her family.

LESSON XI—SECTION B

PREPARATION OF A DINNER

MENU

Tomato Soup	
Cannelon of Beef	Potato Brabant
Spinach	
Bread	Butter
Chocolate Bread Pudding Hard Sauce	
Coffee	

TOMATO SOUP

(HOME RECIPE)

1 qt. tomatoes	2 cloves
1½ c. water	2 pepper corns
1 onion	2 t. salt

Method.—Combine ingredients, boil ten minutes and then strain. Melt 2 tb. butter or other fat, add 2 tb. flour and then add the strained liquid. Boil 3 minutes and serve in hot cups.

CANNELON OF BEEF

(HOME RECIPE)

2 lb. round steak	1 egg
grated rind of ¼ lemon	½ t. onion juice
1 tb. chopped parsley	2 tb. shortening
f.g. nutmeg	¼ t. pepper
1 t. salt	

Method.—Chop meat fine and add other ingredients in order given. Shape into a roll about 4 in. wide and 2 in. thick; then

place in a baking pan and bake thirty minutes in a hot oven. Baste four times with 3 tb. of fat, in one cup of boiling water.

POTATO BRABANT

(HOME RECIPE)

Prepare six medium sized potatoes as for boiling and cut into quarters, lengthwise. Parboil ten minutes, drain, and place in the pan with the meat. Baste when basting the meat.

SPINACH

(HOME RECIPE)

Use one-fourth peck of spinach. Remove roots, carefully pick over (discarding wilted leaves), and wash under running water to free from all grains of sand. Put in a stew pan, allow to heat gradually and boil 25 min. or until tender, in its own juices. Drain thoroughly, chop finely, reheat, and season with 3 tb. butter, salt, and pepper. Form in a pleasing shape on a serving dish and garnish with slices of hard cooked egg.

CHOCOLATE BREAD PUDDING

(HOME RECIPE)

1 c. stale bread crumbs	$\frac{1}{8}$ c. sugar
2 c. scalded milk	1 egg
1 sq. unsweetened chocolate	$\frac{1}{8}$ t. salt
1 t. vanilla	

Method.—Soak bread in milk thirty minutes; melt chocolate, add $\frac{1}{2}$ of sugar and enough milk taken from bread and milk to pour; then add to the mixture the remaining sugar, salt, vanilla, and egg slightly beaten; turn into buttered pudding dish and bake one hour in a moderate oven. Serve with hard sauce.

HARD SAUCE

(HOME RECIPE)

3 tb. butter 1 t. vanilla
 $\frac{1}{2}$ c. powdered sugar

Method.—Cream the butter, then add the sugar gradually.
Add the flavoring.

REFERENCES

Principles of Nutrition and Nutritive Value of Food. By W. O. Atwater. Pp. 48, Figs. 2. 1902. (U. S. Department of Agriculture, Farmers' Bulletin 142.)

School Lunches. By Caroline L. Hunt and Mabel Ward. Pp. 27. 1916. (U. S. Department of Agriculture, Farmer's Bulletin 712.)

LESSON XII—SECTION A

SERVING FAMILY MEALS

In most homes some of the members of the household are engaged in occupations which require them to be away during the greater part of the day. As a result of this the meal time, especially at night, is the only opportunity for real enjoyment in the family circle. Careful thought should therefore be given to planning and furnishing the dining-room.

It should be a room large enough to meet the needs of the family, with an allowance for the occasional guest. There should be plenty of windows to admit light, air, and sunshine. A pleasant outlook is also desirable.

The woodwork may be painted white or stained and varnished to harmonize with the furniture. The walls should be covered with a simple, plain paper which harmonizes with the rug and the furniture. The ceiling should be lightest in tone, the walls medium, and the rug darkest. A dark, cold room needs a warm toned paper, say one of yellow-brown, while a gray green or blue may be used on a warm, sunny room. A

few pictures may be used, but a plate rail or any other "dust catcher" is undesirable.

Direct artificial light which produces a glare is unpleasant in its effects. Either side lights or the modern indirect lighting is much better. The window curtains should be of a soft, simple material, such as muslin or scrim. The curtains are pleasing and they are also more sanitary if they are fastened to a small rod and then allowed to hang in straight folds which just clear the window sill. If more light is needed or if there is a beautiful outlook, slide the curtains from the center and fill the gap at the top with a piece of the curtain which is nine to twelve inches in length.

Have only such furniture in the room as is really necessary. A table, chairs, and a sideboard or serving table are sufficient. It should be simple but substantial. Furniture which is made along plain lines and without ornamentation is in good taste. Choose chairs which have the lines of the back following the curve of the human body, as they will be much more comfortable.

The linen should be simple in design and should be of good quality. There is no economy in buying cheap linen. The china, glass, and silver are also in better taste if they are either perfectly plain or are decorated near the edge with a simple, conventional design. Avoid gilt on cheap dishes.

A table cloth may be used with propriety at any meal, but doilies are permissible for breakfast and luncheon. When a cloth is used, a silence cloth of asbestos or canton flannel should be placed on the table first. This not only dulls

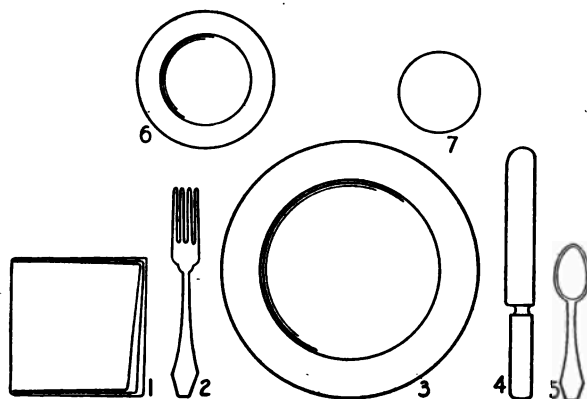


FIG. 7. DIAGRAM ILLUSTRATING COVER

- | | |
|--------------------|--------------------------------------|
| 1. Napkin | 4. Knife (cutting edge toward plate) |
| 2. Fork (tines up) | 5. Teaspoon |
| 3. Plate | 6. Bread and butter plate |
| | 7. Tumbler |

sounds but serves to protect the table. The table cloth should be placed on the table with the long fold lengthwise. A small, low growing plant or a few cut flowers give a touch of beauty to the table. A simple white doily may be used under the dish holding the plant.

Only the silver, glass, and china needed should be placed upon the table. They should be arranged as indicated on the diagram. The silver is placed in order of use from the outside toward the plate; that is, a soup spoon should be placed still farther to the right if soup is to be the first course.

With a simple home service it is important that all the food, dishes, etc., needed for a particular course, be on the table. Hot food should be served on hot dishes and cold food should be served on cold dishes. A wheel tray is convenient for such a service, and every woman doing her own work should not only own one, but should learn to use it. A very satisfactory wagon can be made by fastening a wooden tray upon the wheels of an old baby carriage.

LESSON XII—SECTION B

PREPARATION OF A SUPPER OR
LUNCHEON

MENU

Potato Salad	Mayonnaise
Nut Raisin Bread	Butter
Sliced Peaches	
Tea	

POTATO SALAD

(HOME RECIPE)

4 cold boiled potatoes	1 medium cucumber
1 large onion	5 tb. mayonnaise dressing

Method.—Cut the potatoes into one-half inch cubes. Pare and cut the cucumber into quarter inch cubes. Skin the onion and cut it into one-eighth inch cubes. Combine the potato, onion, and cucumber and add the mayonnaise, tossing lightly with a fork until the ingredients are thoroughly mixed. Set in a cold place until time to serve. Arrange in a salad bowl and garnish with lettuce, or parsley.

MAYONNAISE DRESSING

(HOME RECIPE)

1 c. olive oil	½ t. salt
2 tb. beaten egg	f.g. cayenne or paprika
2 tb. lemon juice or vinegar	

Method.—Beat egg with Dover egg beater; add seasonings, including acid, and then add oil, a teaspoonful at a time at first and then one tablespoon. Beat after each addition.

NUT RAISIN BREAD

(HOME RECIPE)

$\frac{3}{4}$ c. graham flour	$\frac{3}{8}$ c. sugar
$\frac{3}{4}$ c. white flour	$\frac{3}{8}$ c. milk
2 t. baking powder	$\frac{1}{2}$ c. raisins
$\frac{1}{2}$ t. salt	$\frac{1}{4}$ c. nut meats

Method.—Mix and sift together the dry ingredients. Add the milk and beat vigorously. Flour the chopped nuts and raisins and add to other mixtures, mixing them thoroughly. Put into a well-greased bread pan and let it stand 20 min. Bake one hour.

Note: One-half loaf will be ample for supper or luncheon for a family of five.

SLICED PEACHES

Wash, wipe, and pare six large peaches. Slice and sprinkle with $\frac{1}{4}$ c. of sugar.

TEA

1 t. tea to 1 c. freshly boiled water for each person.

Method.—Heat the tea-pot, put in the leaves and pour the boiling water over them. Cover closely and let draw 3 to 5 min. Serve in hot cups.

LESSON XII

Principles of Nutrition and Nutritive Value of Food. By W. O. Atwater. Pp. 48, Figs. 2. 1902. (U. S. Department of Agriculture, Farmers' Bulletin 142.)

The Farm Kitchen as a Workshop. By Anna Barrows. Pp. 20, Figs. 6. 1914. (U. S. Department of Agriculture, Farmers' Bulletin 607.)

School Lunches. By Caroline L. Hunt and Mabel Ward. Pp. 27. 1916. (U.S. Department of Agriculture, Farmers' Bulletin 712.)

Selection of Household Equipment. By Helen W. Atwater. Pp. 24, Pls. 4, Figs. 1. 1915. (U. S. Department of Agriculture, Yearbook Separate 646.) Price, 5 cents.

LESSON XIII—SECTION A

FOOD FOR INFANTS AND YOUNG CHILDREN¹

Each year greater attention is given to the care and feeding of infants, so that they may be properly nourished and developed into healthy citizens, prepared to meet the responsibilities of life. To bring about these results the care must start with the birth of the child and continue throughout the years of growth and development.

Nature's food, mother's milk, is most desirable for infants because it contains all the necessary nutrients in the right proportions to properly nourish the child. No perfect substitute for mother's milk has been obtained. It is necessary, however, to resort to artificial feeding when no milk is secreted, when the mother is delicate, or when the child does not thrive on mother's milk. Cow's milk is the usual substitute for mother's milk, but to be fed successfully to an infant it needs modifying to make it more nearly like mother's milk. Water may be added to it to reduce the protein and other nutrients; cream, to

¹ A practical demonstration of the care of bottles, nipples, etc., should be given with this lesson.

increase the fat; milk-sugar, to increase the carbohydrates; and sometimes lime water, to make the milk alkaline. If it becomes necessary to resort to artificial feeding, it is best to consult the family physician, who will either give a formula for modifying, or give directions how to obtain modified milk.

In order that the infant may be healthy and thrive, whether breast-fed or bottle-fed, it is necessary not only to have the right food, but also to feed it regularly, to be sure that everything is kept in perfectly sanitary condition, to keep the child quiet after it is fed, and to allow it to sleep two or three hours after each feeding.

After the first six or eight months, the physician may begin to prescribe simple gruels, etc., until the child can take whole milk. When the child is about fourteen months old, thicker cereals are sometimes ordered. They should be thoroughly cooked for about three hours, and then strained. They may be fed from a spoon.

By the end of the first year the normal child should be taking eight or nine ounces of food at a time, five times a day. During the second year the lime water and milk sugar may be gradually omitted and broth (mutton, veal, or chicken) and egg-white added. Orange juice and beef juice may also be given.

During the third year the child is given a greater quantity of solids. Potatoes and other vegetables are introduced into the diet.

Detailed directions for feeding infants may be obtained from some recognized authoritative book, such as Holt's "The Care and Feeding of Children."

When a child is old enough to be given solid foods, it is very essential to his health that he be allowed plenty of time for his meals and that he learn to masticate his food thoroughly. Food should be given at regular intervals, but nothing between meals. The largest meal should be given at the middle of the day, and a light supper at least a half-hour before bed-time. Milk may be given once between meals.

The most desirable foods for children are milk, eggs, beefsteak, mutton chops, roast lamb, and chicken; baked, boiled, or steamed vegetables; sponge cakes and lady-fingers (if not fresh); fruits, custards, junkets, rice pudding, tapioca, or gelatine; milk, water, and cocoa.

The following foods should not be given to children: Dried or salted meat or fish; raw vegetables; fried foods; fresh or hot breads; rich cakes, pastry, and rich preserves; tea, coffee, or alcoholic drinks.

It is not wise to wait until a child grows up before

teaching him good table manners. Children should not sit sidewise or on the edge of the chair. They should not put their elbows on the table. Warn them not to drink until they have swallowed the food that they may be eating. Do not let them lean their glasses over their nose while they are drinking. Teach them to eat solid food with a fork, taking only small portions at one time. Soup should be eaten quietly from the side of the spoon and it should be dipped away from rather than toward the person who is eating. Do not allow a child to tip dishes in order to get the last bit of food. When taking food from a dish in which it is served, the utensils supplied for that purpose should be used and not the child's knife, fork, or spoon. Children should not be allowed to reach across the table for food nor to reach in front of another person. When not in use, the knife and fork should be laid along the side of the plate and the spoon should be on the side of the saucer. Children should be cautioned against speaking when their mouths are full, keeping their mouths open when they are eating, or smacking their lips. They should not be allowed to monopolize the conversation at the table but reasonable questions should be answered and they should be encouraged to contribute to the general conversation. There should be no such thing as "com-

pany manners." Careless or greedy habits should be checked as they appear. The problem is an easy one if parents are careful to observe the rules of good manners themselves, for children will become polite by imitation.

LESSON XIII—SECTION B

COOKERY FOR INFANTS¹

BARLEY WATER

(INDIVIDUAL RECIPE)

1 tb. barley flour 1 pinch salt
1 pt. boiling water

Thoroughly blend flour with a little cold water, add, stirring, to boiling water and salt. Cook thirty minutes in double boiler and strain. Add as much boiled water as has boiled away.

Barley gruel or barley jelly is made in the same manner, using from two to four tablespoons of barley flour.

MUTTON BROTH

(HOME RECIPE)

1 lb. lean mutton cut from fore-quarter and some bones (cracked)
1 pt. cold water 1 pinch salt

Cut lean meat up into fine pieces. Combine meat, bones, cold water, and salt; and then cook slowly for three hours. Strain through muslin. When cold remove fat. Feed warm, or cold, as a jelly.

Chicken, veal, and beef broth may be made by the same method as mutton broth.

CODDLED EGG

(INDIVIDUAL RECIPE)

2 c. water 1 egg

¹ Barley flour as marketed in packages for such use is a common commercial product.

Boil water, set dish to cooler part of stove. Do not allow water to boil again. Place egg carefully in water. Be sure that the entire egg is covered. Cover the dish and allow the egg to stand three minutes. The white should be milky looking and of the consistency of soft jelly. Do not use the yolk. At first, feed only half the white; later, the whole white.

BEEF JUICE

(HOME RECIPE)

First Process.—Slightly broil round beefsteak, cut thick. Express the juice with lemon squeezer or meat press. This, seasoned with salt, may be given cold, or warmed by placing cup which holds it in warm water. It should not be heated sufficiently to coagulate the albumin. One to two ounces may be given once a day to an infant two or three years old.

Second Process.—1 lb. finely chopped steak
6 oz. cold water
1 pinch salt

Place in covered jar and let stand on ice five to six hours or over night. Strain and squeeze out all juice by placing meat in coarse muslin and twisting tight.

ALBUMEN WATER

(INDIVIDUAL RECIPE)

1 egg white (fresh egg) $\frac{1}{2}$ pt. water (boiled and cooled)
1 pinch salt

This should be thoroughly mixed and fed cold, either from a spoon or bottle. It may be ordered by the doctor in case of stomach or intestinal disorder.

REFERENCES

Food for Young Children. By Caroline L. Hunt. Pp. 20, Figs. 4. 1916. (U. S. Department of Agriculture, Farmers' Bulletin 717.)

Infant Care. By Mrs. Max West. Pp. 87, Figs. 14. 1914.
(U. S. Department of Labor, Children's Bureau Publication,
Care of Children Series 2, No. 8.)

The Care of the Baby. Pp. 14. 1914. (U. S. Public Health
Service, Public Health Reports, Supplement 10.)

The Summer Care of Infants. By W. C. Rucker and C. C.
Pierce. Pp. 15, Figs. 8. 1916. (U. S. Public Health Service,
Public Health Reports, Supplement 16.)

LESSON XIV—SECTION A

FOOD FOR SCHOOL

The diet of a child is always important, as it determines to a large extent the physical condition in later life. All through school life, a constant supervision of the food of a child is necessary. Digestion and assimilation are very active; all parts of the body are increasing in size; the muscles are trained to more coördinated activity; and the nervous system is constantly receiving and storing new impressions. The body requires sufficient food of the right kind to nourish it and to stimulate its activities. Investigations prove that many so-called backward children are dull because of the lack of proper nourishment.

To keep up these body functions, to repair wastes of the body, and to aid in the development of new tissues, it is necessary to furnish liberal and well planned meals so arranged that they supply the needed mineral matters and growth-stimulating substances as well as protein and energy. Care must be taken to furnish variety in the food, for children in this period of unrest tire of a monotonous diet. Some foods may be chosen for flavor alone.

Frequently children are interested in their play or other activities at meal time and their bodies are not in proper condition to take care of the food eaten. Sufficient time should be required to prepare for meals. A child should be required to wash his hands and face and comb his hair before coming to the table. He should keep his mouth clean and his teeth in good condition. After meals children should not play or work hard until sufficient time has been taken for the digestion of the food. To hurry to school with no breakfast or an insufficient amount and kind, causes hunger and fatigue during the morning and poor work in lessons. Children should be required to take a full breakfast, consisting of fruit, fresh or stewed; well cooked cereal, served with milk or cream and a little sugar; some toast or day-old bread; and a drink of hot milk or cocoa. If the child will eat more, soft-cooked eggs may be added.

DIET FOR ADOLESCENT CHILDREN

There is no time in the whole life history of the individual during which there is more urgent need of the materials required to build up the red blood cells than between the ages of twelve and sixteen. During this period the foundation of physical efficiency is laid, and the normal healthy boy or

girl will usually require almost as much food as an adult.

At this age children develop abnormal appetites or notions about their food, and usually more attention must be given to flavors, attractiveness, and variety. As iron is a necessity for the development of the red blood cells, some of the foods containing high percentages of iron, such as beef, eggs, raisins, prunes, beans, peas, lentils, or green vegetables, especially spinach, asparagus, cabbage, lettuce, and celery, should be used in the diet daily.

To further the physical development of the child, besides supplying an abundance of non-stimulating food, it is necessary to watch carefully the hygienic condition. The child should be trained in regular habits of life, should have plenty of out-of-door exercise and an abundance of sleep—from nine to ten hours daily.

The Lunch Box.—When the child begins school his daily life is radically changed, and the food requirements of the body are greatly increased to meet the many new demands on the body. There is great need of a lunch in the middle of the session. In many schools a recess is given and lunches may be eaten. In some schools lunches are furnished by the school for a small sum. Children should be encouraged to bring lunches from home or

should be supplied with money to buy a lunch at school.

Often the school is situated a long distance from home and the child is not able to go home for the mid-day meal. Such conditions require the child to carry enough lunch for the whole day, and the lunch box needs special attention.

The box itself is of utmost importance, for the food must remain in it several hours. A metal box is most desirable as it can be easily sterilized. The collapsible type is most convenient to carry home when emptied.

To have a lunch palatable after it has been packed several hours requires great care. Each article of food should be wrapped separately in paraffine paper, which keeps the food from drying out. The small packages should then be packed closely but neatly. The appearance of the lunch box should be made as dainty and attractive as possible. Napkins, either paper or linen, should be included.

Sandwiches usually form the main part of the lunch and can be prepared in attractive shapes from many different materials. The bread may be white, whole wheat, graham, oatmeal, or nut, and should be cut thin, about one-fourth inch thick. Choice may be made from a variety of fillings such as meats, fish, and eggs with or without a salad dressing; cheese, jellies, and peanut butter.

Something sweet should be included such as cakes, cookies, candies, dates, figs or raisins, and some relish such as olives, pickles, radishes, celery, or fresh fruit. If this can be supplemented with a cup of cocoa or a bowl of soup the child need not suffer as a result of carrying lunches to school.

The lunch time at school should be as pleasant a meal time as any other, and good habits in eating as well as good manners should be developed.

LESSON XIV—SECTION B

PREPARATION OF LUNCH BOX

MENU

	Orange or Apple	
Sandwiches		Gingerbread
Sweet		or
Egg		Graham Drop Cakes

ORANGE

(INDIVIDUAL RECIPE)

Wash and wipe the orange. Cut through the skin above and below the center leaving an inch band. Remove the caps and then remove the thick membrane. Sever the band at the junction of two sections and then separate the sections from each other, leaving all attached to the band. Replace the sections and cover with the caps before wrapping in waxed paper.

SWEET SANDWICHES

(GENERAL DIRECTIONS)

Cut white bread at least one day old into thin slices. Spread one slice with butter and one slice with jelly or marmalade. Put the slices together and cut into three or four sandwiches. Wrap neatly in waxed paper before packing.

Seasoned cottage cheese may be used alone or in combination with marmalade for sandwich filling.

FILLING FOR EGG SANDWICHES

(GENERAL DIRECTIONS)

Chop finely the whites of hard cooked eggs. Crush the yolk to a paste and moisten with salad dressing. (See page 102.) Add other seasonings as desired. Stir in the chopped whites and spread. Lettuce leaf or minced ham or cheese may be mixed with egg filling.

GINGER BREAD

(HOME RECIPE)

1 c. flour	$\frac{1}{2}$ c. molasses
$\frac{1}{2}$ t. soda	$\frac{1}{4}$ c. boiling water
$\frac{1}{2}$ t. salt	2 tb. lard or other short- ening
$\frac{3}{4}$ t. cinnamon	$\frac{1}{4}$ t. cloves
$\frac{3}{4}$ t. ginger	

(INDIVIDUAL RECIPE)

5 tb. flour	2 tb. molasses
$\frac{1}{8}$ t. soda	1 tb. boiling water
$\frac{1}{8}$ t. salt	$\frac{1}{2}$ tb. lard or other short- ening
$\frac{1}{4}$ t. cinnamon	$\frac{1}{16}$ t. cloves
$\frac{1}{4}$ t. ginger	

Method.—Mix and sift dry ingredients. Add hot water to crisco, and then mix with molasses. Combine liquid and dry ingredients and beat vigorously. Bake in moderate oven 25 min.

GRAHAM DROP CAKES

(HOME RECIPE)

2 $\frac{1}{2}$ c. graham flour	1 c. brown sugar
1 t. soda	$\frac{1}{4}$ c. shortening
$\frac{1}{4}$ t. salt	1 egg
$\frac{1}{2}$ t. cinnamon	1 c. sour milk
$\frac{1}{2}$ t. nutmeg	$\frac{1}{2}$ c. currants or raisins

Method.—Mix and sift the dry ingredients. Cream the shortening, add the sugar, and continue creaming and then add the beaten egg. Add the flour and the milk alternately, adding a little of the flour first. Stir in the currants or the raisins (chopped). Drop by teaspoonfuls on a baking sheet and bake in a moderate oven fifteen minutes.

REFERENCES

School Lunches. By Caroline L. Hunt and Mabel Ward. Pp. 27. 1916. (U. S. Department of Agriculture, Farmers' Bulletin 712.)

LESSON XV—SECTION A

FOOD FOR THE SICK

An invalid is a person disabled by infirmities or disease. As each case has a special cause or causes, each must be considered separately and a special diet planned. In each case the person will benefit greatly by proper dietetic and hygienic treatment.

In hospitals and among nurses and physicians diets for invalids are usually classified as liquid, soft-solid, and special. Liquid diets include milk, broths, beef juice, beef tea, cocoa, fruit beverages, barley and rice waters, gruel, and cream soups. In soft diets are found soft-cooked eggs, milk toast, custards, jellies, junkets, ice creams, and ices. The solid diet includes simple foods containing solid parts, such as cereals, vegetables, meats, fruits, desserts (except pastry and rich cakes), and eggs in all forms except hard-boiled. Special diets are usually planned with particular reference to the peculiar condition of the patient and are especially prescribed by the physician.

In preparing dietaries for invalids only a few general directions can be given, as each person needs certain foods, depending upon the disease,

the constitution, surroundings, etc. The doctor should prescribe the diet the patient may have, and the nurse must follow his directions to the letter, giving the food in the proper quantities and at regular intervals. It is unwise to consult a patient about his food if he is on a diet. If a patient asks for some special food, always consult the doctor about it before giving it to the patient.

Before serving an invalid bathe face and hands, adjust pillows, and fix him in as comfortable a position as possible. If a regular invalid table is not available, a pile of books or magazines on each side of the patient's knees will serve as supports for the tray, or a table may easily be prepared from a wooden soap box by removing the sides and top. The ends will form the table legs and the bottom the table top.

Great care must be exercised in preparing the tray. It should be of a convenient size to accommodate the menu, and should be covered with a clean white cloth.

The dishes should be the most attractive available and should be arranged in an artistic but a simple form. A flower adds to the appearance of the tray and may please the invalid. Or, a little surprise in the nature of a gift or a letter or a note from a friend may distract his attention so that while enjoying these he unconsciously enjoys his meal

or takes the nourishment without paying much attention to it.

In serving a patient, it is wise not to serve too many things at one time and always to serve in small quantities, for the patient will try to eat all of a small serving, while a generous serving may take away what little appetite he has. Be sure of the seasonings and temperature of the food and always serve hot foods hot and cold foods cold. When the diet is limited vary it as much as possible in preparation and serving.

After the meal, the tray and all traces of the meal should be removed.

If the patient's appetite is poor it may sometimes be stimulated by giving fruit beverages, beef tea, and oysters. These in themselves have but little food value but tend to increase the flow of the digestive juices, and these in turn create a desire for food.

All cereals should be thoroughly cooked and toast should be crisp all through, not just browned on the outside. It may be softened with hot milk or water.

Milk and eggs form the main articles in an invalid's diet, and can be served in a variety of ways. Gelatines and ices furnish an attractive means of serving liquid foods in solid forms, and cream soups add variety to milk diet.

Constipation, which is very common and which is frequently the source of many diseases, results from such causes as carelessness in attention to bodily functions at the proper time, lack of exercise, too little water, lack of bulk in food, lack of the natural laxative salts and acids of vegetables and fruits, improper habits in eating, or the use of indigestible foods. When constipation seems due to other than such causes a physician should always be consulted.

Foods which in themselves are laxative are commonly of much benefit. The following are generally believed to aid greatly in relieving the trouble: oranges, lemons, grapefruit, apples, prunes, figs, asparagus and other green vegetables, molasses, honey, olive oil, butter, cream, oatmeal, whole-grain breads, bran biscuit, and buttermilk.

Another common disease which needs dietetic and hygienic rather than medical treatment, is anemia. This disease results in an insufficient supply of red blood cells. It is often caused by improper diet, especially one lacking in foods containing iron; intestinal or other parasites; improper ventilation and clothing; lack of outdoor exercise; and an insufficient amount of sleep. In such cases a cure may be brought about by the use of plenty of well-cooked cereals, milk, eggs, simple foods, plenty of fresh fruits and vegetables,

and regular meals. It is better to take five light meals a day than three heavy meals. More serious anemia is also known, so a physician's advice should be sought when anemia occurs.

LESSON XV—SECTION B

FOOD AND BEVERAGES FOR SICK PEOPLE

MILK TOAST

(INDIVIDUAL RECIPE)

Cut two one-fourth-inch slices of stale bread and brown it evenly on both sides. Spread the toast with a little butter and set it in a warm place. Scald one cup of milk and pour it over the hot toast just before serving.

EGG IN NEST

(INDIVIDUAL RECIPE)

Break an egg and separate the yolk from the white. Beat the white until stiff, add a few grains of salt, and then pile it on a circular piece of toast which has been dipped into boiling, salted water. Make a depression in the center of the white and drop in the yolk. Bake in a moderate oven until delicately browned.

GELATIN

LEMON JELLY

(HOME RECIPE)

1 tb. granulated gelatin	1½ c. sugar
¼ c. cold water	4 tb. lemon juice
1 c. boiling water	

(INDIVIDUAL RECIPE)

1½ t. granulated gelatin	2 tb. sugar
1 tb. cold water	½ tb. lemon juice
¼ c. boiling water	

Method.—Soften gelatin in cold water; add boiling water and stir until it is dissolved, then add sugar and lemon juice. Turn into a mold and chill. Serve with whipped cream.

JUNKET

(HOME RECIPE)

1 c. milk	2 tb. sugar
$\frac{1}{4}$ junket tablet	$\frac{1}{2}$ t. vanilla
1 tb. cold water	

(INDIVIDUAL RECIPE)

$\frac{1}{4}$ c. milk	1 t. sugar
$\frac{1}{8}$ junket tablet	2 drops flavoring
1 t. water	

Method.—Dissolve the tablet in the cold water. Heat milk and sugar until lukewarm, then add the vanilla and dissolved tablet. Pour into glass cups and set aside until it jellies.

BEVERAGES

LEMONADE

(INDIVIDUAL RECIPE)

For one glass of lemonade use one small lemon or one-half of a large one. Wash and wipe the lemon and then squeeze the juice into a bowl, discarding the seeds. Add one tablespoonful of sugar and three-fourths of a cup of boiling water. Chill and strain before serving.

Fruit juices, either fresh or preserved, may be added to the lemonade.

EGG LEMONADE

(INDIVIDUAL RECIPE)

Beat one egg thoroughly. Add one tablespoonful of sugar, two tablespoonfuls of lemon juice, and three-fourths of a cup of cold water. Strain and serve.

ORANGE JUICE

(INDIVIDUAL RECIPE)

Pour the juice of one orange into a glass containing crushed ice. Sweeten if desired.

REFERENCES

Principles of Nutrition and Nutritive Value of Food. By W. O. Atwater. Pp. 48, Figs. 2. 1902. (U. S. Department of Agriculture, Farmers' Bulletin 142.)



INDEX

A

Abbreviations, 10
 Absorption, 67
 Acid, hydrochloric, 65
 Air, 34, 38
 Albumen water, 98
 Albumin, 12, 17, 34
 Alcohol, 43, 44
 Amino acids, 66
 Amylopsin, 66
 Anemia, 110

B

Bacteria, 1, 2, 24, 43
 Baked apple, 68
 Barley gruel, 97
 water, 97
 Batters, 32
 Beans, 49
 baked, 53, 54
 loaf, 54
 sandwiches, 54
 Beef, 7, 12, 14, 16, 17
 cannelon of, 83
 cuts, 14
 juice, 98
 stew, 21
 Bile, 66
 Bisque, tomato, 62
 Boiled custard, 27
 Bran, 41, 42
 Bread, 43-48

Breads,

 cleft rolls, 46
 nut raisin, 91
 Parker House, 46
 Bread sticks, 62
 Breakfast, 78
 cereals, 46
 Brisket, 14, 15
 Broiling, 18
 Brown sauce, 18, 19, 20
 Buckwheat, 32
 Butter, 8
 Buttered crumbs, 52, 53

C

Cabbage, escalloped, 52
 Cake, 35, 36, 37
 graham, drop, 106
 plain, 36
 rules for baking, 35, 36
 sponge, 37
 Calcium, 6, 50
 Calorie, 9, 73, 75, 76
 Cannelon of beef, 83
 Carbohydrates, 6, 8, 49, 56, 58
 Carbon-di-oxide, 34, 43, 44
 Cellulose, 8, 31, 41
 Cereals, 6, 7, 8, 31-48
 Cheese, 49
 Chuck, 13, 14, 15
 Chocolate, 8
 bread pudding, 84
 Clod, 14, 15

- Cocoa, 79
 Codfish, 16
 Coffee, 79
 Connective tissue, 13
 Constipation, 110
 Corn, 31, 40
 Cornstarch pudding, 27
 Cover, 88
 Cowpeas, 49
 Creamed vegetables, 61
 Cream of vegetable soup, 61, 62
 Croutons, 63
 Custard,
 baked, 28
 boiled, 27, 28
- D
- Diet, 8, 73
 adolescent children, 101, 102
 children, 92-106
 invalid, 107
 Dietary, 72, 107
 standards, 72-77
 Dining room, 86, 87
 Dinner, 83
 Doughs, 32
 Dumplings, 22
- E
- Eggs, 6-8, 12, 24, 25, 49
 coddled, 97, 98
 creamy, 29
 foamy omelet, 29
 plain omelet, 29
 poached, 28
 preservation of, 26
 soft and hard cooked, 28
 vermicelli, 30
 Emergency biscuit, 10
 Endosperm, 41
 Energy, 8
 Escalloped cabbage, 52
 Esophagus, 64
 Extractives, 13
- F
- Fats, 6, 8, 65
 Fatty acids, 66
 Ferment, 42, 44
 Fireless cooker, 20, 47, 51
 Fish, 7, 12, 15, 16
 Flank, 14, 15
 Flour,
 bread, 42
 graham, 41, 42
 mixtures, 32, 33
 pastry, 42
 whole wheat, 42
 Food, 5
 requirement, 75, 76
 Fruits, 57, 58, 68
 Fuel value, 72
- G
- Gastric juice, 65
 Gelatin, 12, 112
 Germ, 1, 2
 Ginger bread, 106
 Gluten, 40, 41
 Glycerin, 66
 Graham drop cakes, 106
 Grape fruit, 78
- H
- Hard sauce, 85
 Hemoglobin, 7
 Hydrochloric acid, 65
- I
- Intestines, 64-67
 Invertase, 66
 Iron, 7, 50, 102, 110
- J
- Junket, 113

L

Lactase, 66
 Lactose, 8
 Leavens, 34, 42
 Legumes, 8, 12, 49, 50-55
 Lemonade, 113
 Lemon jelly, 112
 Lentils, 49
 Loin, 14, 15
 Lunch box, 102, 106
 Luncheon, 90

M

Macaroni,
 baked, 53
 boiled, 53
 Magnesia, 7
 Maltase, 66
 Mayonnaise, 69
 Measurements, 10
 Meat, 8, 12, 13, 16-20, 49
 broiled, 17, 18
 cuts, 14
 roasting, 17-19
 soup, 20
 stewed, 20, 21
 Milk, 6, 7, 24, 25, 49, 73
 care of, 24, 25
 modified, 92, 93
 mother's, 92
 toast, 112
 Minerals, 6, 42, 56, 57, 73, 82
 Muffins, 78, 79
 Muscle, 13
 Mutton, 12, 17
 broth, 97

N

Navel, 14, 15
 Nitrogen, 7, 8, 9
 Nutrients, 5, 24, 31, 73, 80
 Nutrition, 5

Nuts, 8, 49, 51
 loaf, 54
 value, 51
 Nut raisin bread, 91

O

Oatmeal, 7, 33
 Olives, 8
 Omelet,
 foamy, 29
 plain, 29
 Orange, 105
 juice, 113

P

Pancreatic juice, 66
 Parker House rolls, 46
 Pasteurize, 25
 Pastry, 37-39
 Peas, 49
 Pepsin, 65
 Peptones, 65, 66, 67
 Phosphorous, 7, 50
 Pie,
 apple, 38
 crust, 38
 Pork, 17
 Potato,
 baked, 61
 boiled, 61
 frabrant, 84
 salad, 90
 Potassium, 50
 Pot roast, 19
 Poultry, 12
 Proteoses, 65
 Protein, 6-9, 12, 13, 16, 24, 42,
 49, 56, 65, 92
 Prunes, 68
 Ptyalin, 64

S

Sirloin, 14, 16

Soup, 20
 cream of vegetable, 61
 meat, 20
 tomato, 83
 bisque, 62
 Spinach, 84
 Starch, 8, 31, 41, 43, 44, 53
 Steak,
 broiled, 17, 18
 Hamburg, 21
 Steapsin, 66
 Sterilizing, 25
 Stomach, 14, 65
 Sugar, 8, 24, 57
 Sulphur, 7
 Supper, 90

T

Table manners, 95, 96
 Tea, 91
 Tenderloin, 14
 Tissue, 7, 9, 12, 13, 64
 Tomato bisque, 62
 Trypsin, 66

V

Veal, 17
 Vegetables, 6, 7, 49, 56-63, 73, 81,
 82
 creamed, 61
 strong juiced, 57
 sweet juiced, 56, 57
 Vitamines, 77

W

Water, 6
 glass, 26
 Wheat, 31, 40, 41
 muffins, 78
 White sauce, 52, 53

Y

Yeast, 42, 43

